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Herring purse seine fishing activity in the southern Gulf of St. Lawrence, 1995-1998

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Abstract

The 1995 to 1998 fishing activities of a herring purse seiner in the southern Gulf of St. Lawrence are presented in summary tables and maps. The activity data was collected as part of an on-going project with the southern Gulf of St. Lawrence herring fleet to record position and acoustic signals while fishing boats are searching for herring schools during regular fishing activity. Latitudes and longitudes collected using GPS are automatically recorded to a computer file during operation of the data collection system. The recording system is activated by the vessel captain upon leaving port and is turned off upon returning to port. Fishing activity is identified as traversing (traveling to, from, and between fishing grounds), searching (searching for fish on the fishing grounds), fishing (setting the net), pumping (pumping fish into the boat), surveying (sailing over pre-determined survey transects), and other (any activities identified as not relating to the fishing activity, such as waiting in port, drifting and sleeping during daylight hours). Activities were identified using visual cues based on pattern, speed of boat, and captain logbooks. The fishing track was then divided by activity into 100m intervals and the distance and time spent during each activity was determined for each fishing trip. A summary of the activities indicated that the average number of hours for searching ranged from 5 to 15. The summer months were those with the highest average searching.

Résumé

Les activités de pêche de 1995 à 1998 d'un grand seineur de hareng dans le sud du golfe du Saint-Laurent sont présentées dans des tableaux et des cartes sommaires. Les données sur l'activité de pêche ont été recueillies dans le cadre d'un projet en cours avec la flottille de pêche du hareng du sud du golfe du Saint-Laurent visant à enregistrer la position et les signaux acoustiques des bancs de harengs au cours des recherches menées par les bateaux de pêche durant l'activité de pêche régulière. La latitude et les longitudes recueillies à l'aide du système de positionnement global (GPS) sont automatiquement enregistrées dans un fichier informatique durant le fonctionnement du système de collecte de données. L'appareil d'enregistrement est mis en marche par le capitaine du navire au moment de quitter le port et est arrêté au retour au port. L'activité de pêche est définie de la manière suivante : déplacement (se déplacer depuis et vers les lieux de pêche ou entre ces lieux), recherche (chercher du poisson dans les lieux de pêche), pêche (tendre le filet), pompage (pomper le poisson dans le bateau), relevé (naviguer au-dessus de transects de relevés prédéterminés) et autres (toutes les activités définies comme n'étant pas liées à l'activité de pêche, comme attendre au port, dériver et dormir durant les heures de clarté). Les activités ont été déterminées à l'aide d'indices visuels basés sur la configuration, la vitesse du bateau et les journaux de bord des capitaines. La route de l'activité de pêche a ensuite été divisée par activité en intervalles de 100 m et la distance couverte et le temps passé au cours de chaque activité ont été établis pour chaque expédition de pêche. Un résumé des activités a indiqué que le nombre moyen d'heures de recherche variait de cinq à quinze. Les mois d'été étaient ceux qui avaient la moyenne de recherche la plus élevée.

1. Introduction

Understanding fleet dynamics is an important part of fisheries stock assessment and management. This understanding is important to interpret data provided by the fishing fleet for stock assessments. These data may include catch rates or qualitative information on fish behaviour and abundance. Often data provided by the fishing industry is qualitative in nature or not reported in sufficient detail for the interaction of fish abundance, fishing behaviour, and fishing regulations to be studied. One of the reasons for this lack of detail is that typically only locations and amount of catch are recorded in fishing logbooks, while the time spent traveling to fish or searching for fish is not available. This report summarizes in tabular and mapping formats detailed information that was collected by a herring purse seiner in the southern Gulf of St. Lawrence. It is hoped that these data will improve interpretation of catch rate and qualitative information provided by the fishing industry for stock assessments.

2. Data description

The information collected consists of latitude and longitude determined by GPS units and recorded automatically to computer files. These data were collected as part of on-going acoustic projects with this herring fleet (Claytor et al. 1999). The hardware systems and data collection methods have been described elsewhere (Clay and Claytor 1998, Claytor et al. 1998). This system provides an objective means of collecting data. The vessel captain activates the system upon leaving port and turns it off upon returning to port. While the system is operating, positional and acoustic data are automatically recorded to a computer file.

Software processing consists of identifying the fishing activity as **traversing** (traveling to, from, and between fishing grounds), **searching** (searching for fish on the fishing grounds), **fishing** (setting the net), **pumping** (pumping fish into the boat), **surveying** (sailing over pre-determined survey transects), and **other** (any activities identified as not relating to the fishing activity, such as waiting in port, drifting and sleeping during daylight hours). Activities were identified using visual cues based on pattern, speed of boat, and captain logbooks. The fishing track was then divided into 100m intervals by activity and the distance and time spent during each activity was determined for each fishing trip (Claytor et al. 1998). FEMTO HDPS hardware and software was used for the collection and processing of the positional data prior to mapping and tabular summaries.

Tables 1 - 6 summarize the fishing activities from 1995 to 1998. The maps consist of the fishing track, with activity identified by the line font as indicated in the legend for each map. Where activity warranted a more detailed view, an inset of selected portions of the track is provided.

3. Fisheries and biology of 4T southern Gulf of St. Lawrence herring

NAFO Division 4T encompasses the southern Gulf of St. Lawrence (Appendix. 1). Herring originating in this area consist of two seasonally defined spawning components. Spring spawning occurs primarily in May but extends from April to June, at depths < 10m. Fall spawning occurs from mid-August to late September at depths from 5 to 20m. First spawning for both seasonal components occurs primarily at age 4 but 50% of age 3 herring sampled on 4T spawning grounds are in spawning condition. The largest spring spawning populations are in the Northumberland Strait, between New Brunswick and Prince Edward Island, and in the Magdalen Islands. Relatively small spring spawning populations occur in Chaleur Bay (New Brunswick-Québec), eastern Prince Edward Island, and Pictou, Nova Scotia (Appendix. 1). The largest fall spawning population is in Chaleur Bay. Smaller fall populations are found in the Northumberland Strait between New Brunswick and Prince Edward Island, eastern Prince Edward Island, Pictou, Nova Scotia, and the Magdalen Islands (Appendix. 1), (Claytor et al. 1998).

After spawning, herring form large schools in Chaleur Bay and on the north side of Prince Edward Island (Claytor et al. 1998). They remain in these areas until mid-October when they begin to migrate to eastern Cape Breton (4Vn) where they overwinter (Appendix 1). Herring return to 4T from 4Vn overwintering areas in the spring, as the ice begins to recede. Herring age 2 and less

possess anti-freeze proteins (Chadwick et al. 1990) which allows them to remain in the Gulf of St. Lawrence for the winter or migrate later in the fall to 4Vn.

Southern Gulf of St. Lawrence herring are harvested by an inshore gillnet fleet on spring and fall spawning grounds for a food and bait market in the spring and a roe market in the fall. The inshore fleet is allocated 77% of the 4T herring quota. Larger purse seiners harvest pre- or post-spawning aggregations in the spring and fall for a food market. In late fall and early winter, the purse seiners follow 4T herring into 4Vn where a fishery on the overwintering portion of the population occurs (Claytor et al. 1998).

The majority of the purse seine harvest comes from the Chaleur Bay fishery where mixed schools of spring and fall spawners are caught. The overwintering fishery in 4Vn has occurred from November 1 to mid-December in recent years and harvests primarily fall spawners. Catches are variable in the spring fishery (1000 - 4000 t), which occurs from April to June between the Magdalen Islands and Cape Breton. The purse seine fleet usually fishes as a group and so the fishing area and activity of one boat is representative of the fleet (Claytor and Clay 2001).

4. Use in stock assessments

Using fishing activity data combined with biomass estimates from acoustic soundings recorded by the purse seine vessel indicates that catch per meter searched is linearly related to density (Claytor and Clay 2001). As a result, these data represent the basis for an abundance index derived from purse seine fishing activity. This result is important because it has generally been observed that catch per set by purse seiners is not indicative of abundance. Although these data are more time consuming to collect than catch per set information, they have the potential to greatly improve stock assessments by contributing an abundance index that has not previously been available.

5. Acknowledgments

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Table 1. Summary of mobile herring vessel fishing activities for 1995.

1995	Hours Activity				Kilometers Activity			
Date	Searching	Fishing	Pumping	Traversing	Searching	Fishing	Pumping	Traversing
Summer 4T								
23-Aug	5.2	0.1	1.7	11.0	68.9	0.6	3.1	210.5
26-Aug	6.8			10.0	101.9			179.0
27-Aug	7.2	0.1	1.5	4.2	78.4	1.0	1.9	81.4
28-Aug	6.8	0.1	2.8	2.6	141.4	0.6	1.3	50.2
29-Aug	1.1			2.4	2.8			46.5
31-Aug	4.7	0.2	2.7	1.7	64.0	1.6	4.4	34.1
Sum	**31.8**	**0.5**	**8.7**	**31.9**	**457.4**	**3.8**	**10.7**	**601.7**
Average	**5.3**	**0.1**	**2.2**	**5.3**	**76.2**	**1.0**	**2.7**	**100.3**
Fall 4T								
1-Sep	7.2	0.2	2.3	5.0	121.3	1.5	1.9	97.4
2-Sep	8.3	0.3	2.2	4.3	123.0	2.4	3.5	83.5
3-Sep	1.1	0.2	2.3	3.9	8.2	1.9	3.6	74.2
4-Sep	8.4	0.2	2.0	4.2	141.2	1.7	3.4	85.9
5-Sep	4.6			7.0	67.0			88.8
11-Sep	3.4	0.5	5.3	4.8	49.4	4.6	8.6	91.1
12-Sep	0.6	0.2	2.4	5.7	8.8	1.7	4.5	110.0
13-Sep	6.4	0.1	1.8	4.9	88.7	0.2	2.7	97.8
14-Sep	6.4	0.4	3.5	5.0	96.6	3.0	5.2	97.3
15-Sep	5.9	0.2	4.7	4.8	87.5	1.3	7.7	93.4
Sum	**52.3**	**2.3**	**26.5**	**49.6**	**791.7**	**18.3**	**41.1**	**919.4**
Average	**5.2**	**0.3**	**2.9**	**5.0**	**79.2**	**2.0**	**4.6**	**91.9**

Table 1.(cont.) Summary of mobile herring vessel fishing activities for 1995.

1995	Hours Activity				Kilometers Activity			
Date	Searching	Fishing	Pumping	Traversing	Searching	Fishing	Pumping	Traversing
Fall 4T								
16-Sep	1.1			3.9	16.8			76.2
18-Sep	8.5	0.3	2.7	4.4	128.4	2.6	5.1	83.2
19-Sep	10.5	0.2	1.0	1.5	58.7	1.4	1.5	27.4
20-Sep	2.6	0.4	3.4	2.1	36.5	2.3	4.6	42.3
21-Sep	5.3	0.2	2.0	6.0	72.2	1.2	3.7	113.8
24-Sep	4.0	0.3	3.5	3.3	62.8	2.1	5.2	63.1
25-Sep	3.5	0.4	2.6	4.5	28.0	2.3	3.8	91.6
16-Sep	3.2	0.5	5.0	3.9	41.2	3.4	7.0	75.2
27-Sep	7.4	0.4	4.4	3.9	124.7	3.5	6.4	65.5
29-Sep	6.4	0.4	4.6	3.2	85.1	3.5	6.7	47.1
30-Sep	4.7	0.1	1.1	11.9	74.3	0.7	1.7	215.9
Sum	**57.2**	**3.2**	**30.3**	**48.6**	**728.7**	**23.0**	**45.7**	**901.3**
Average	**5.2**	**0.3**	**3.0**	**4.4**	**66.2**	**2.3**	**4.6**	**81.9**
September								
Sum	**109.5**	**5.5**	**56.8**	**98.2**	**1520.4**	**41.3**	**86.8**	**1820.7**
Average	**5.2**	**0.3**	**3.0**	**4.7**	**72.4**	**2.2**	**4.6**	**86.7**

Table 1.(cont.) Summary of mobile herring vessel fishing activities for 1995.

1995	Hours Activity				Kilometers Activity			
Date	Searching	Fishing	Pumping	Traversing	Searching	Fishing	Pumping	Traversing
Fall 4T								
1-Oct	8.1	0.6	4.5		115.3	4.1	7.1	
2-Oct	14.7			4.3	81.1			80.5
3-Oct	4.8	0.7	6.6	4.1	66.9	5.1	9.8	78.0
4-Oct	7.0	0.4	3.4	4.1	99.2	2.6	5.0	77.1
5-Oct	7.0	0.3	3.5	1.6	103.0	2.7	4.9	29.8
9-Oct	4.4	0.6	5.2	2.2	49.3	3.9	7.4	40.8
10-Oct	2.7	0.5	5.5	1.7	33.3	4.2	10.9	29.9
11-Oct	3.6	0.6	6.2	2.9	38.2	4.2	14.1	53.7
12-Oct	4.4	0.6	6.1	2.9	61.6	4.3	11.6	53.4
15-Oct	11.2			2.3	142.9			43.7
Sum	**67.9**	**4.3**	**41.0**	**26.1**	**790.8**	**31.1**	**70.8**	**486.9**
Average	**6.8**	**0.5**	**5.1**	**2.9**	**79.1**	**3.9**	**8.9**	**54.1**
19-Oct	8.4	0.1	2.0	5.9	151.1	1.1	2.9	121.0
20-Oct	8.4	0.3	4.8	0.8	120.6	2.7	7.7	15.7
23-Oct	24.4	0.1	1.7		381.3	0.3	2.6	
24-Oct	10.3				143.2			
26-Oct	14.6				286.6			
Sum	**66.1**	**0.5**	**8.5**	**6.7**	**1082.8**	**4.1**	**13.2**	**136.7**
Average	**13.2**	**0.2**	**2.8**	**3.4**	**216.6**	**1.4**	**4.4**	**68.4**
October								
Sum	**134.0**	**4.8**	**49.5**	**32.8**	**1873.6**	**35.2**	**84.0**	**623.6**
Average	**8.9**	**0.4**	**4.5**	**3.0**	**124.9**	**3.2**	**7.6**	**56.7**

Table 1. (cont.) Summary of mobile herring vessel fishing activities for 1995.

1995	Hours Activity				Kilometers Activity			
Date	Searching	Fishing	Pumping	Traversing	Searching	Fishing	Pumping	Traversing
4T Sum	**276.3**	**10.8**	**115.0**	**162.9**	**3851.4**	**80.3**	**181.5**	**3046.0**
Average	**6.6**	**0.3**	**3.2**	**4.3**	**91.2**	**2.1**	**5.0**	**81.2**
4Vn								
31-Oct	2.8	0.3	3.6	4.5	37.8	2.5	6.3	88.4
1-Nov	9.9	0.1	1.1	6.3	87.4	1.1	1.8	118.7
2-Nov	2.1	0.2	1.5	4.8	26.1	1.2	3.2	90.0
6-Nov	7.5	0.3	3.0	6.7	108.7	2.7	5.8	126.9
9-Nov	5.3	0.6	6.8	8.9	80.5	4.5	12.8	145.0
10-Nov	2.7	0.1	1.5	10.0	42.9	0.9	3.6	81.7
11-Nov	6.0	0.3	4.2	6.9	82.0	3.0	6.1	120.0
13-Nov	19.6				111.5			
Sum	**55.9**	**1.9**	**21.7**	**48.1**	**576.9**	**15.9**	**39.6**	**770.7**
Average	**7.0**	**0.3**	**3.1**	**6.9**	**72.1**	**2.3**	**5.7**	**110.1**
17-Nov	6.0	0.3	9.0	7.0	77.9	2.4	13.1	137.4
18-Nov	7.9	0.4	5.2	2.5	101.3	3.0	7.5	50.0
19-Nov	4.0	0.7	6.2	7.0	57.4	5.7	9.8	133.5
23-Nov	6.7	0.4	3.6	14.1	88.6	2.8	4.9	192.1
Sum	**24.6**	**1.8**	**24.0**	**30.6**	**325.2**	**13.9**	**35.3**	**513.0**
Average	**6.2**	**0.5**	**6.0**	**7.7**	**81.3**	**3.5**	**8.8**	**128.3**
4Vn Sum	**80.5**	**3.7**	**45.7**	**78.7**	**902.1**	**29.8**	**74.9**	**1283.7**
Average	**6.6**	**0.4**	**4.6**	**7.3**	**76.7**	**2.9**	**7.2**	**119.2**
1995 Total	**355.8**	**14.5**	**160.7**	**241.6**	**4753.5**	**110.1**	**256.4**	**4329.7**
Average	**6.5**	**0.3**	**3.6**	**5.1**	**87.6**	**2.3**	**5.5**	**90.7**

Table 2. Summary of mobile herring vessel fishing activity 1996.

1996 Date	Hours Activity					Kilometers Activity				
	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
Spring MW										
13-Apr	15.9	0.2	2.6	5.5		131.8	0.9	4.0	93.4	
28-Apr	5.9	0.3	2.7	4.1		96.3	2.5	4.6	69.5	
29-Apr	5.8	0.3	4.0	3.1		50.7	2.7	8.0	63.3	
Sum	**27.6**	**0.8**	**9.3**	**12.7**		**278.8**	**6.1**	**16.6**	**226.2**	
Average	**9.2**	**0.3**	**3.1**	**4.2**		**92.9**	**2.0**	**5.5**	**75.4**	
1-May				2.2					39.5	
2-May	7.7	0.3	1.1		4.2	137.9	2.3	2.1		5.1
3-May	14.6					278.3				
5-May	7.5				0.7	126.4				1.1
14-May	11.6	0.2	1.2			203.5	0.9	1.8		
15-May	6.0					105.2				
Sum	**47.4**	**0.5**	**2.3**	**2.2**	**4.9**	**851.3**	**3.2**	**3.9**	**39.5**	**6.2**
Average	**9.5**	**0.3**	**1.2**	**2.2**	**2.5**	**170.3**	**1.6**	**2.0**	**39.5**	**3.1**
16-May	9.3					157.1				
19-May	8.8					158.7				
20-May	4.9					97.9				
Sum	**23.0**					**413.7**				
Average	**7.7**					**137.9**				
May										
Sum	**70.4**	**0.5**	**2.3**	**2.2**	**4.9**	**1265.0**	**3.2**	**3.9**	**39.5**	**6.2**
Average	**8.8**	**0.3**	**1.2**	**2.2**	**2.5**	**158.1**	**1.6**	**2.0**	**39.5**	**3.1**

*MW = Midwater trawl

Table 2. (cont.) Summary of mobile herring vessel fishing activity 1996.

1996 Date	Hours Activity					Kilometers Activity				
	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
14-Jun	7.9	6.9	2.6	5.7		61.2	50.7	6.3	102.0	
15-Jun	9.3	7.4	2.2	4.3		85.4	57.5	5.2	84.2	
16-Jun				6.3					118.3	
18-Jun	17.0	1.6				128.6	12.2			
20-Jun	4.1					83.1				
21-Jun	5.2					85.1				
23-Jun	8.5	3.3	2.2	4.5		157.6	25.3		91.9	
June										
Sum	**52.0**	**19.2**	**7.0**	**20.8**		**601.0**	**145.7**	**11.5**	**396.4**	
Average	**8.7**	**4.8**	**2.3**	**5.2**		**100.2**	**36.4**	**5.8**	**99.1**	
Spring										
Sum	**150.0**	**20.5**	**18.6**	**35.7**	**4.9**	**2144.8**	**165.0**	**32.0**	**662.1**	**6.2**
Average	**8.8**	**2.3**	**2.3**	**4.5**	**2.5**	**126.2**	**17.2**	**4.6**	**82.8**	**3.1**
Summer MW										
7-Jul	3.0					52.0				
9-Jul	7.2	3.9				120.2	26.3			
10-Jul	0.4	3.3		2.9		7.2	23.2		53.2	
Sum	**10.6**	**7.2**		**2.9**		**179.4**	**49.5**		**53.2**	
Average	**3.5**	**3.6**		**2.9**		**59.8**	**24.8**		**53.2**	
17-Jul	6.3	8.3		11.1		122.9	31.8		210.3	
18-Jul	2.5			11.5		31.8			210.5	
29-Jul				4.1					80.3	
Sum	**8.8**	**8.3**		**26.7**		**154.7**	**31.8**		**501.1**	
Average	**4.4**	**8.3**		**8.9**		**77.4**	**31.8**		**167.0**	
July										
Sum	**19.4**	**15.5**		**29.6**		**334.1**	**81.3**		**554.3**	
Average	**4.0**	**8.0**		**5.9**		**68.6**	**28.3**		**110.1**	

*MW = Midwater trawl

Table 2. (cont.) Summary of mobile herring vessel fishing activity 1996.

1996 Date	Hours Activity					Kilometers Activity				
	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
4-Aug	10.1	4.9		8.6		161.4	35.2		164.9	
11-Aug	13.8		3.5			224.4		5.8		
12-Aug	16.8	1.0				300.9	5.5			
Sum	**40.7**	**5.9**	**3.5**	**8.6**		**686.7**	**40.7**	**5.8**	**164.9**	
Average	**13.6**	**3.0**	**3.5**	**8.6**		**228.9**	**20.4**	**5.8**	**164.9**	
20-Aug	4.6	1.8	8.0	5.3		41.7	12.1	15.4	102.4	
21-Aug	2.8	8.8	1.6	6.5		42.6	64.1	2.9	97.1	
23-Aug	4.1	7.5	1.7	11.0		52.2	65.2	4.2	210.9	
26-Aug	6.8		0.2	4.3		124.4		0.7	84.4	
31-Aug	3.9	4.9	2.4	7.2	0.2	46.9	28.7	5.4	131.1	0.4
Sum	**22.2**	**23.0**	**13.9**	**34.3**	**0.2**	**307.8**	**170.1**	**28.6**	**625.9**	**0.4**
Average	**4.4**	**5.8**	**2.8**	**6.9**	**0.2**	**61.6**	**42.5**	**5.7**	**125.2**	**0.4**
August										
Sum	**62.9**	**28.9**	**17.4**	**42.9**	**0.2**	**994.5**	**210.8**	**34.4**	**790.8**	**0.4**
Average	**7.9**	**4.8**	**2.9**	**7.2**	**0.2**	**124.3**	**35.1**	**5.7**	**131.8**	**0.4**
1-Sep	4.3	2.3	2.0	4.0		33.7	16.9	4.3	70.5	
4-Sep	1.4			2.3		17.5			43.1	
Sum	**5.7**	**2.3**	**2.0**	**6.3**		**51.2**	**16.9**	**4.3**	**113.6**	
Average	**2.9**	**2.3**	**2.0**	**3.2**		**25.6**	**16.9**	**4.3**	**56.8**	
Summer										
Sum	**88.0**	**46.7**	**19.4**	**78.8**	**0.2**	**1379.8**	**309.0**	**38.7**	**1458.7**	**0.4**
Average	**5.9**	**4.7**	**2.8**	**6.6**	**0.2**	**92.0**	**30.9**	**5.5**	**121.6**	**0.4**

Table 2. (cont.) Summary of mobile herring vessel fishing activity 1996.

1996 Date	Hours Activity					Kilometers Activity				
	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
Fall 4T PS										
7-Sep	3.9	0.3	3.0	10.7		59.9	2.2	5.2	191.4	
8-Sep	0.3	0.1	1.8	2.0		3.4	0.8	3.1	35.4	
9-Sep	8.6	0.2	1.4	2.5		135.9	1.0	3.2	45.8	
10-Sep	5.1	0.5	3.0	7.4		82.0	3.5	5.2	130.6	
11-Sep	8.7	0.4	3.3	3.9		100.8	2.0	5.5	67.0	
15-Sep	9.5	0.3	3.5	2.2		144.5	2.5	5.9	41.2	
Sum	**36.1**	**1.8**	**16.0**	**28.7**		**526.5**	**12.0**	**28.1**	**511.4**	
Average	**6.0**	**0.3**	**2.7**	**4.8**		**87.8**	**2.0**	**4.7**	**85.2**	
16-Sep	13.1			1.5		210.1			28.9	
20-Sep	8.4	0.4	2.9	3.0		104.4	3.1	5.5	59.2	
22-Sep	3.5	0.2	3.2	2.3		51.8	1.7	4.9	42.7	
24-Sep	3.2	0.6	5.8	4.3		48.5	3.7	11.4	78.8	
25-Sep	7.9	0.6	2.3	3.0		120.6	4.5	4.0	56.2	
27-Sep	3.0	0.5	4.3	4.5		43.2	3.5	6.9	73.8	
29-Sep	9.9	0.4	2.2	3.8		140.3	3.8	4.7	69.5	
Sum	**49.0**	**2.7**	**20.7**	**22.4**		**718.9**	**20.3**	**37.4**	**409.1**	
Average	**7.0**	**0.5**	**3.5**	**3.2**		**102.7**	**3.4**	**6.2**	**58.4**	
September										
Sum	**85.1**	**4.5**	**36.7**	**51.1**		**1245.4**	**32.3**	**65.5**	**920.5**	
Average	**6.5**	**0.4**	**3.1**	**3.9**		**95.8**	**2.7**	**5.5**	**70.8**	

*PS = Purse Seine

Table 2. (cont.) Summary of mobile herring vessel fishing activity 1996.

1996 Date	Hours Activity					Kilometers Activity				
	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
1-Oct	9.2			14.7	0.9	127.0			272.2	1.8
4-Oct	7.2	0.6	5.5	1.8		109.8	4.7	8.3	35.5	
5-Oct	5.4	0.1	0.2	3.7		83.6	0.9	0.7	71.4	
7-Oct	15.5	0.2	4.4	1.6	8.7	242.4	1.5	6.4	31.3	15.6
10-Oct	4.4	0.5	4.8	3.7		59.2	2.9	7.2	64.6	
11-Oct	6.1	1.5	3.1	4.0		90.8	4.0	5.8	73.6	
12-Oct	7.1	0.2	3.0	2.3		82.8	1.5	4.4	10.9	
18-Oct	12.6	0.1	0.8	5.1		214.4	1.3	1.4	91.1	
Sum	**67.5**	**3.2**	**21.8**	**36.9**	**9.6**	**1010.0**	**16.8**	**34.2**	**650.6**	**17.4**
Average	**8.4**	**0.5**	**3.1**	**4.6**	**4.8**	**126.3**	**2.4**	**4.9**	**81.3**	**8.7**
Fall 4T PS										
Sum	**152.0**	**7.7**	**58.5**	**88.0**	**9.6**	**2265.4**	**49.1**	**99.7**	**1571.1**	**17.4**
Average	**7.6**	**0.4**	**3.1**	**4.3**	**4.8**	**111.0**	**2.5**	**5.2**	**76.1**	**8.7**
4Vn										
1-Nov	4.1	0.4	3.5	7.0	2.9	52.2	3.1	7.4	135.3	5.3
6-Nov	8.9	0.6	3.4	8.3		129.3	4.5	5.1	160.2	
13-Nov	0.5	0.1	1.3	8.3		6.2	0.7	1.9	152.1	
Sum	**13.5**	**1.1**	**8.2**	**23.6**	**2.9**	**187.7**	**8.3**	**14.4**	**447.6**	**5.3**
Average	**4.5**	**0.4**	**2.7**	**7.9**	**2.9**	**62.6**	**2.8**	**4.8**	**149.2**	**5.3**
22-Nov	2.7	0.8	6.3	7.0		34.4	5.4	8.9	114.5	180.0
23-Nov	0.9	0.1	1.2	6.3		6.3	0.9	1.9	117.0	134.6
Sum	**3.6**	**0.9**	**7.5**	**13.3**		**40.7**	**6.3**	**10.8**	**231.5**	**314.6**
Average	**1.8**	**0.5**	**3.8**	**6.7**		**20.4**	**3.2**	**5.4**	**115.8**	**157.3**
4Vn										
Sum	**17.1**	**2.0**	**16.7**	**36.9**	**2.9**	**228.4**	**14.6**	**25.2**	**679.1**	**319.9**
Average	**3.2**	**0.4**	**3.2**	**7.3**	**2.9**	**41.5**	**3.0**	**5.1**	**132.5**	**81.3**
1996 Total										
Sum	**407.7**	**76.9**	**112.2**	**239.4**	**17.6**	**6008.4**	**527.7**	**195.6**	**4371.0**	**52.0**
Average	**6.3**	**1.9**	**2.9**	**5.6**	**2.6**	**92.7**	**13.6**	**5.1**	**103.2**	**4.7**

*PS = Purse Seine

Table 3. Summary of mobile herring vessel fishing activity 1997.

1997	Hours Activity					Kilometers Activity				
Date	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
Spring 4T										
24-Apr	11.4			5.8		117.8			122.4	
25-Apr	1.9	6.5				32.1	10.7			
27-Apr	19.1	2.3			21.0	329.2	15.7			345.0
Sum	**32.4**	**8.8**		**5.8**	**21.0**	**479.1**	**26.4**		**122.4**	**345.0**
Average	**10.8**	**4.4**		**5.8**	**21.0**	**159.7**	**13.2**		**122.4**	**345.0**
9-May	16.9	5.0				259.6	6.0			
11-May	8.0			26.1		90.3			496.3	
15-May	12.5					257.8				
31-May	4.0			13.9		70.1			276.6	
May										
Sum	**41.4**	**5.0**		**40.0**		**677.8**			**772.9**	
Average	**10.4**	**5.0**		**20.0**		**169.5**			**386.5**	
3-Jun	4.5					68.5				
5-Jun	16.7	4.9		38.5		153.6	6.5		255.2	
7-Jun	3.3	2.9		26.6		47.2	20.3		526.9	
20-Jun	6.6	2.5		15.2		48.7	17.5		287.2	
June										
Sum	**31.1**	**10.3**		**80.3**		**318.0**	**44.3**		**1069.3**	
Average	**7.8**	**3.4**		**26.8**		**79.5**	**14.8**		**356.4**	
Spring										
Sum	**104.9**	**24.1**		**126.1**	**21.0**	**1474.9**	**70.7**		**1964.6**	**345.0**
Average	**9.5**	**4.0**		**21.0**	**21.0**	**134.1**	**12.8**		**327.4**	**345.0**

Table 3. (cont.) Summary of mobile herring vessel fishing activity 1997.

1997 Date	Hours Activity					Kilometers Activity				
	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
Summer4 T										
1-Jul	1.9	3.6		3.8		35.5	26.7		64.8	
7-Jul	4.8	1.9		16.2		90.9	13.5		287.2	
15-Jul	2.4	5.4		19.7		43.2	36.0		357.9	
22-Jul	3.2	2.8		18.3		58.1	24.6		319.0	
July										
Sum	**12.3**	**13.7**		**58.0**		**227.7**	**100.8**		**1028.9**	
Average	**3.1**	**3.4**		**14.5**		**56.9**	**25.2**		**257.2**	
4-Aug	6.7	1.0		14.5		114.4	6.5		258.5	
11-Aug	11.1	3.2		12.3		146.5	20.4		233.9	
24-Aug	3.6	0.1	1.2	18.7		56.6	0.7	2.1	206.5	
25-Aug	3.0	0.3	2.8	15.0		49.8	1.9	4.5	282.2	
26-Aug	6.7	0.2	0.3	6.6	1.4	91.9	0.8	0.8	129.0	1.8
27-Aug	7.8	0.1	1.6	5.8		94.9	0.3	2.3	113.6	
31-Aug	8.7			7.3		121.1			125.7	
Aug										
Sum	**47.6**	**4.9**	**5.9**	**80.2**	**1.4**	**675.2**	**30.6**	**9.7**	**1349.4**	**1.8**
Average	**6.8**	**0.8**	**1.5**	**11.5**	**1.4**	**96.5**	**5.1**	**2.4**	**192.8**	**1.8**
Summer										
Sum	**59.9**	**18.6**	**5.9**	**138.2**	**1.4**	**902.9**	**131.4**	**9.7**	**2378.3**	**1.8**
Average	**5.4**	**1.9**	**1.5**	**12.6**	**1.4**	**82.1**	**13.1**	**2.4**	**216.2**	**1.8**
Fall 4T										
1-Sep	11.4	0.1	0.9	3.3		173.2	0.7	2.4	60.1	
2-Sep	2.9			3.1		42.0			46.4	
7-Sep	13.5	0.2	6.1	3.9	6.9	187.2	0.6	10.9	56.3	14.2
Sum	**27.8**	**0.3**	**7.0**	**10.3**	**6.9**	**402.4**	**1.3**	**13.3**	**162.8**	**14.2**
Average	**9.3**	**0.2**	**3.5**	**3.4**	**6.9**	**134.1**	**0.7**	**6.7**	**54.3**	**14.2**

Table 3. (cont.) Summary of mobile herring vessel fishing activity 1997

1997	Hours Activity					Kilometers Activity				
Date	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
16-Sep	9.1	2.2	4.4		1.0	113.8	36.4	57.9		18.7
18-Sep	7.0	0.7	6.5	1.1		104.1	5.4	12.5	17.4	
20-Sep	4.7	0.3	1.4	3.7		75.6	1.9	2.4	71.7	
22-Sep	7.9	0.3	2.5	1.7		111.6	1.9	8.1	29.9	
23-Sep	6.0	0.2	1.7	4.6		101.4	1.5	3.4	77.4	
25-Sep	7.9	0.2	0.9	4.0		118.1	1.7	1.8	68.5	
27-Sep	8.3	0.6	5.3	4.3		122.9	4.7	11.2	79.8	
28-Sep	8.2	0.2	1.6	1.3		142.3	1.6	2.8	24.5	
30-Sep	5.8	0.6	5.4	4.3		99.8	4.2	11.4	78.1	
Sum	**64.9**	**5.3**	**29.7**	**25.0**	**1.0**	**989.6**	**59.3**	**111.5**	**447.3**	**18.7**
Average	**7.2**	**0.6**	**3.3**	**3.1**	**1.0**	**110.0**	**6.6**	**12.4**	**55.9**	**18.7**
September										
Sum	**92.7**	**5.6**	**36.7**	**35.3**	**7.9**	**1392.0**	**60.6**	**124.8**	**610.1**	**32.9**
Average	**7.7**	**0.5**	**3.3**	**3.2**	**4.0**	**116.0**	**5.5**	**11.3**	**55.5**	**16.5**
1-Oct	7.1	0.7	7.2	3.1		100.3	5.0	11.4	52.0	
2-Oct	13.3	0.3	3.4	3.0		225.0	1.1	5.1	47.9	
3-Oct	11.9	0.6	3.8	2.1		185.7	4.6	7.1	35.8	
4-Oct	6.3	0.4	4.4	7.0	1.9	98.3	3.0	7.9	103.8	3.1
5-Oct	9.4	0.4	0.9	2.6		136.1	1.3	1.5	50.1	
8-Oct	9.6	0.5	3.8	1.2		120.0	3.6	6.0	18.2	
9-Oct	7.3	0.3	3.1	2.3		107.8	2.0	6.4	41.0	
10-Oct	3.1	0.2	2.0	1.5		40.5	1.5	3.4	24.1	
12-Oct	5.6	0.5	3.3	2.5		74.9	3.4	5.3	46.1	
13-Oct	7.9	0.4	2.1	2.2		121.3	2.1	3.0	42.1	
14-Oct	14.6	0.1	2.1	2.7	5.9	185.4	1.2	4.2	41.0	7.8
Sum	**96.1**	**4.4**	**36.1**	**30.2**	**7.8**	**1395.3**	**28.8**	**61.3**	**502.1**	**10.9**
Average	**8.7**	**0.4**	**3.3**	**2.7**	**3.9**	**126.8**	**2.6**	**5.6**	**45.6**	**5.5**

Table 3. (cont.) Summary of mobile herring vessel fishing activity 1997.

1997	Hours Activity					Kilometers Activity				
Date	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
17-Oct	7.9			4.0		123.7			71.4	
19-Oct	12.4			6.4		165.4			121.6	
22-Oct	10.4	0.1	1.2	2.5		168.1	1.1	2.1	38.9	
30-Oct	9.4					183.1				
31-Oct	10.9	0.3	2.7	14.9	2.2	88.1	2.2	4.9	279.2	3.5
Sum	**51.0**	**0.4**	**3.9**	**27.8**	**2.2**	**728.4**	**3.3**	**7.0**	**511.1**	**3.5**
Average	**10.2**	**0.2**	**2.0**	**7.0**	**2.2**	**145.7**	**1.7**	**3.5**	**127.8**	**3.5**
October										
Sum	**147.1**	**4.8**	**40.0**	**58.0**	**10.0**	**2123.7**	**32.1**	**68.3**	**1013.2**	**14.4**
Average	**9.2**	**0.4**	**3.1**	**3.9**	**3.3**	**132.7**	**2.5**	**5.3**	**67.5**	**4.8**
Fall 4T										
Sum	**239.8**	**10.4**	**76.7**	**93.3**	**17.9**	**3515.7**	**92.7**	**193.1**	**1623.3**	**47.3**
Average	**8.6**	**0.4**	**3.2**	**3.6**	**3.6**	**125.6**	**3.9**	**8.0**	**62.4**	**9.5**
Fall 4Vn										
3-Nov	5.8	0.3	2.8	8.6		51.1	2.0	4.1	148.9	
4-Nov	1.6			5.1		18.5			90.3	
6-Nov	5.8	0.4	4.6	8.3		74.1	3.3	8.8	153.1	
11-Nov	7.1	0.9	6.5	8.9		98.9	7.5	12.1	130.3	
14-Nov	8.0	0.3	1.8	9.2		72.6	2.3	3.4	161.0	
Sum	**28.3**	**1.9**	**15.7**	**40.1**		**315.2**	**15.1**	**28.4**	**683.6**	
Average	**5.7**	**0.5**	**3.9**	**8.0**		**63.0**	**3.8**	**7.1**	**136.7**	
16-Nov	5.3	0.9	6.5	8.0		61.5	6.1	11.4	150.0	
18-Nov	4.1	0.7	4.8	8.7		51.9	4.3	7.0	158.7	
Sum	**9.4**	**1.6**	**11.3**	**16.7**		**113.4**	**10.4**	**18.4**	**308.7**	
Average	**4.7**	**0.8**	**5.7**	**8.4**		**56.7**	**5.2**	**9.2**	**154.4**	
4Vn										
Sum	**37.7**	**3.5**	**27.0**	**56.8**		**428.6**	**25.5**	**46.8**	**992.3**	
Average	**5.4**	**0.6**	**4.5**	**8.1**		**61.2**	**4.3**	**7.8**	**141.8**	

Table 3. (cont.) Summary of mobile herring vessel fishing activity 1997

Date	Hours Activity					Kilometers Activity				
	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
1997 Total										
Sum	**442.3**	**56.6**	**109.6**	**414.4**	**40.3**	**6322.1**	**326.3**	**249.6**	**6958.5**	**394.1**
Average	**7.8**	**1.2**	**3.2**	**8.3**	**5.8**	**110.9**	**7.1**	**7.3**	**139.2**	**56.3**
Survey4Vn										
21-Nov	2.0			2.0	3.4	38.6			36.4	64.4
22-Nov	0.6	0.4	2.0	2.5	0.9	8.5	2.6	3.7	46.2	16.5
25-Nov	0.4			3.7	9.1	8.0			70.3	175.1
Sum	**3.0**	**0.4**	**2.0**	**8.2**	**13.4**	**55.1**	**2.6**	**3.7**	**152.9**	**256.0**
Average	**1.0**	**0.4**	**2.0**	**2.7**	**4.5**	**18.4**	**2.6**	**3.7**	**51.0**	**85.3**

Table 4. Summary of mobile herring vessel fishing activity, 1998.

1998	Hours Activity					Kilometers Activity				
Date	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
Summer4T										
27-Jul	11.8	6.5	0.5	3.3		219.2	48.2	1.2	66.8	
11-Aug	9.5			2.7		188.5			57.3	
Summer										
Sum	**21.3**	**6.5**	**0.5**	**6.0**		**407.7**	**48.2**	**1.2**	**124.1**	
Average	**10.7**	**6.5**	**0.5**	**3.0**		**203.9**	**48.2**	**1.2**	**62.1**	
Fall 4T										
31-Aug	5.3	0.3	2.4	5.4		73.4	1.9	4.1	100.0	
1-Sep	2.8	0.1	1.5	6.9		34.8	1.2	1.6	133.2	
2-Sep	9.3	0.4	1.7	1.9		110.9	3.1	2.6	35.4	
4-Sep	7.2	0.3	2.8	2.7		128.9	2.2	2.9	51.3	
6-Sep	6.2	0.3	2.8	4.2		100.7	2.5	3.7	77.6	
7-Sep	10.9	0.1	0.8	4.1		172.2	1.0	1.2	78.6	
10-Sep	7.7	0.4	3.1	2.7		127.8	3.6	4.3	53.8	
11-Sep	13.0			0.4		198.5			8.4	
12-Sep	10.7	0.5	3.7	6.0		181.5	3.7	5.6	114.2	
13-Sep	4.3	0.2	2.0	8.8		33.6	1.6	2.9	170.1	
15-Sep	11.4	0.5	3.7	1.5		187.9	3.7	5.6	30.6	
Sum	**83.5**	**2.8**	**22.1**	**39.2**		**1276.8**	**22.6**	**30.4**	**753.2**	
Average	**8.4**	**0.3**	**2.5**	**3.9**		**127.7**	**2.5**	**3.4**	**75.3**	

Table 4. (cont.) Summary of mobile herring vessel fishing activity, 1998

1998	Hours Activity					Kilometers Activity				
Date	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
17-Sep	24.4	0.4	4.4	3.0	6.0	401.5	3.1	7.6	51.1	9.5
19-Sep	8.6	0.1	0.7	2.1		125.0	1.0	0.9	40.2	
20-Sep	13.1	0.5	3.1	1.0		222.6	4.2	6.6	19.0	
24-Sep	10.5	0.1	1.1	2.4		150.7	0.9	2.9	45.2	
25-Sep	9.7	0.2	1.7	13.6		136.5	1.6	2.4	273.4	
26-Sep	7.6	0.4	2.5	2.9		126.0	3.1	4.4	56.2	
28-Sep	5.4	0.2	1.8	5.4		77.6	1.2	2.3	105.0	
29-Sep	8.7			9.5		128.5			179.9	
Sum	**88.0**	**1.9**	**15.3**	**39.9**	**6.0**	**1368.4**	**15.1**	**27.1**	**770.0**	**9.5**
Average	**11.0**	**0.3**	**2.2**	**5.0**	**6.0**	**171.1**	**2.2**	**3.9**	**96.3**	**9.5**
September										
Sum	**171.5**	**4.7**	**37.4**	**79.1**	**6.0**	**2645.2**	**37.7**	**57.5**	**1623.2**	**9.5**
Average	**9.7**	**0.3**	**2.3**	**4.5**	**6.0**	**149.4**	**2.3**	**3.6**	**85.8**	**9.5**
4-Oct	6.0	0.3	2.2	4.4		99.9	1.9	4.4	86.5	
6-Oct	6.8	0.6	4.2	2.5		89.9	4.4	6.6	43.6	
7-Oct	9.1	0.1	0.7	2.9		106.4	0.9	2.2	48.8	
8-Oct	3.9	0.1	2.5	1.9		73.4	1.0	4.7	34.5	
9-Oct	9.1			10.8		153.4			216.1	
10-Oct	13.1			1.8		212.0			35.7	
12-Oct	8.8	0.5	3.6	1.6		148.6	3.9	6.0	30.5	
13-Oct	6.1	0.7	4.8	3.5		89.8	4.4	6.4	67.2	
14-Oct	13.9			1.2		243.4			23.7	
Sum	**76.8**	**2.3**	**18.0**	**30.6**		**1216.8**	**16.5**	**30.3**	**586.6**	
Average	**8.5**	**0.4**	**3.0**	**3.4**		**135.2**	**2.8**	**5.1**	**65.2**	

Table 4. (cont.) Summary of mobile herring vessel fishing activiey, 1998

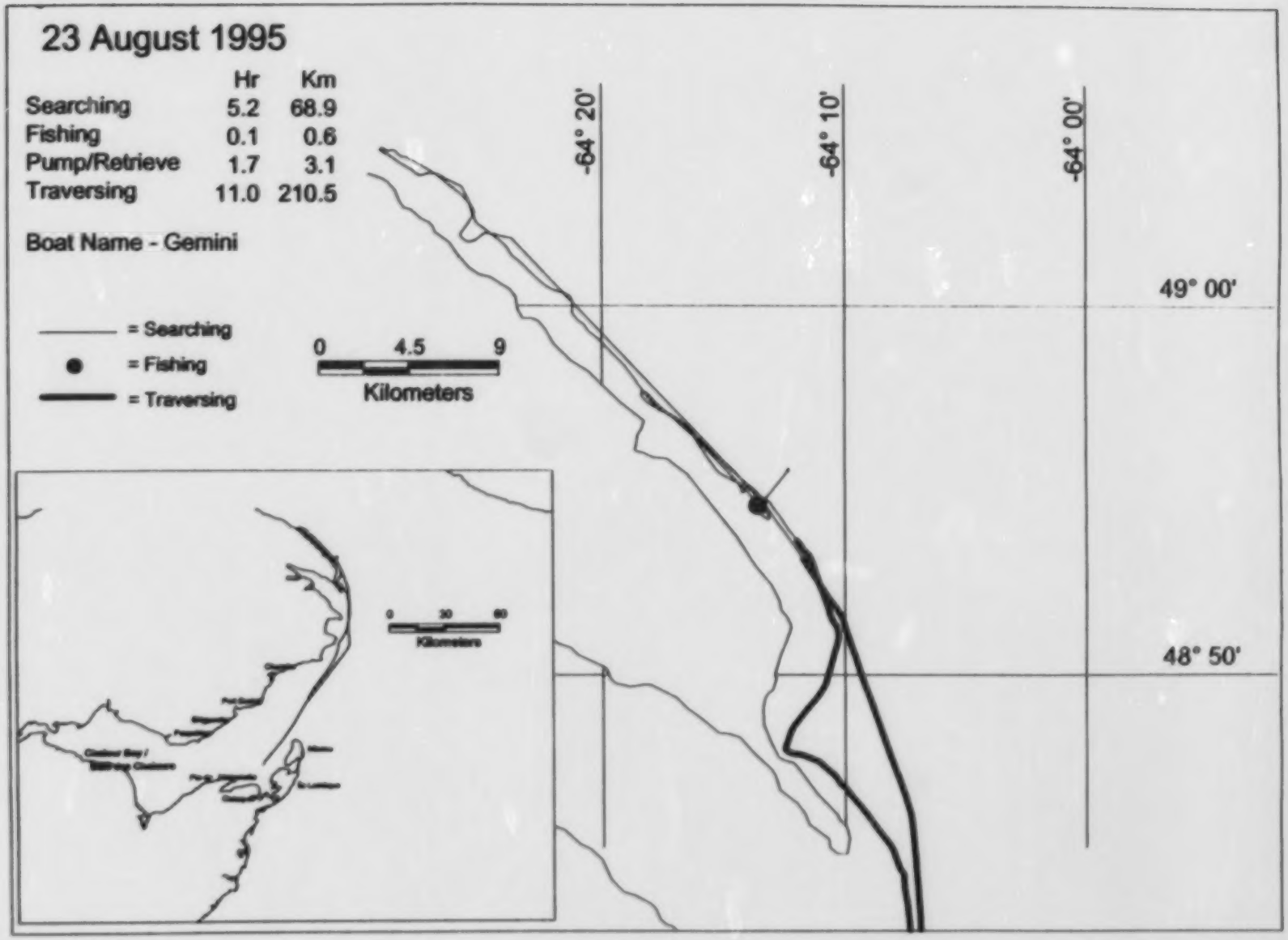
1998	Hours Activity					Kilometers Activity				
Date	Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
17-Oct	7.9			3.3		127.8			64.6	
18-Oct	7.5			9.9		135.5			165.4	
20-Oct	2.8			7.7		13.6			130.6	
27-Oct	2.8			7.7		13.6	130.6			
Sum	**21.0**			**28.6**		**290.5**	**130.6**		**360.6**	
Average	**5.3**			**7.2**		**72.6**	**130.6**		**120.2**	
Fall 4T										
Sum	**103.1**	**2.6**	**20.4**	**64.6**	**6.0**	**1580.7**	**149.0**	**34.4**	**1047.2**	**9.5**
Average	**7.2**	**0.3**	**2.6**	**5.1**	**6.0**	**107.6**	**34.4**	**4.3**	**92.8**	**9.5**
1998 Total										
Sum	**124.4**	**9.1**	**20.9**	**70.6**	**6.0**	**1988.4**	**197.2**	**35.6**	**1171.3**	**9.5**
Average	**8.9**	**3.4**	**1.5**	**4.1**	**6.0**	**155.7**	**41.3**	**2.7**	**77.4**	**9.5**

Table 5. Sum of fishing activity time and distance by season and area, 1995 - 1998.

Season and area	Year	Sum									
		Hours					Kilometers				
		Searching	Fishing	Pumping	Traversing	Other	Searching	Fishing	Pumping	Traversing	Other
Spring 4T											
	1996	150.0	20.5	18.6	35.7	4.9	2144.8	155.0	32.0	662.1	6.2
	1997	104.9	24.18		126.1	21.0	1474.9	70.7		1964.6	345.0
Summer 4T	1995	31.8	0.5	8.7	31.9		457.4	3.8	10.7	601.7	
	1996	88.0	46.7	19.4	78.8	0.2	1379.8	309.0	38.7	1458.7	0.4
	1997	59.9	18.6	5.9	138.2	1.4	902.9	131.4	9.7	2378.3	1.8
	1998	21.3	6.5	0.5	3.0		407.7	48.2	1.2	124.1	
Fall 4T	1995	275.3	10.8	115.0	162.9		3851.4	80.3	181.5	3046.0	
	1996	152.6	7.7	58.5	88.0	9.6	2255.4	49.1	99.7	1571.1	17.4
	1997	239.8	10.4	76.7	93.3	17.9	3515.7	92.7	193.1	1623.3	47.3
	1998	103.1	2.6	20.4	64.6		1580.7	149.0	34.4	1047.2	
4Vn	1995	80.5	3.7	45.7	78.7		902.1	29.8	74.9	1283.7	
	1996	17.1	2.0	15.7	36.9	2.9	228.4	14.6	25.2	679.1	319.9
	1997	37.7	3.5	27.0	56.8		428.6	25.5	46.8	992.3	

Table 6. Average fishing activity time and distance by season and area, 1995 – 1998.

Season and area	Year	Average Hours Searching	Fishing	Pumping	Traversing	Other	Average Kilometers Searching	Fishing	Pumping	Traversing	Other
Spring 4T											
	1996	8.8	2.3	2.3	4.5	2.5	126.2	17.2	4.6	82.8	3.1
	1997	9.5	4.0		21.0	21	134.1	12.8		327.4	345.0
Summer 4T	1995	5.3	0.1	2.2	5.3		76.2	1.0	2.7	100.3	
	1996	5.9	4.7	2.8	6.6	0.2	92.0	30.9	5.5	121.6	0.4
	1997	5.4	1.9	1.5	12.6	1.4	82.1	13.1	2.4	216.2	1.8
	1998	10.7	6.5	0.5	3		203.9	48.2	1.2	62.1	
Fall 4T	1995	6.5	0.3	3.2	4.3		91.2	2.1	5	81.2	
	1996	7.5	0.4	3.1	4.3	4.8	111	2.5	5.2	76.1	8.7
	1997	8.6	0.4	3.2	3.6	3.6	125.6	3.9	8.0	62.4	9.5
	1998	7.2	0.3	2.6	5.1	6	107.6	34.4	4.3	92.8	
4Vn	1995	6.6	0.4	4.6	7.3		76.7	2.9	7.2	119.2	
	1996	3.2	0.4	3.2	7.3	2.9	41.5	3	5.1	132.5	81.3
	1997	5.4	0.6	4.5	8.1		61.2	4.3	7.8	141.8	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Fishing 0.1 0.6
Pump/Retrieve 1.7 3.1
Traversing 11.0 210.5
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= Searching
= Fishing
= Traversing
0 4.5 9
Kilometers
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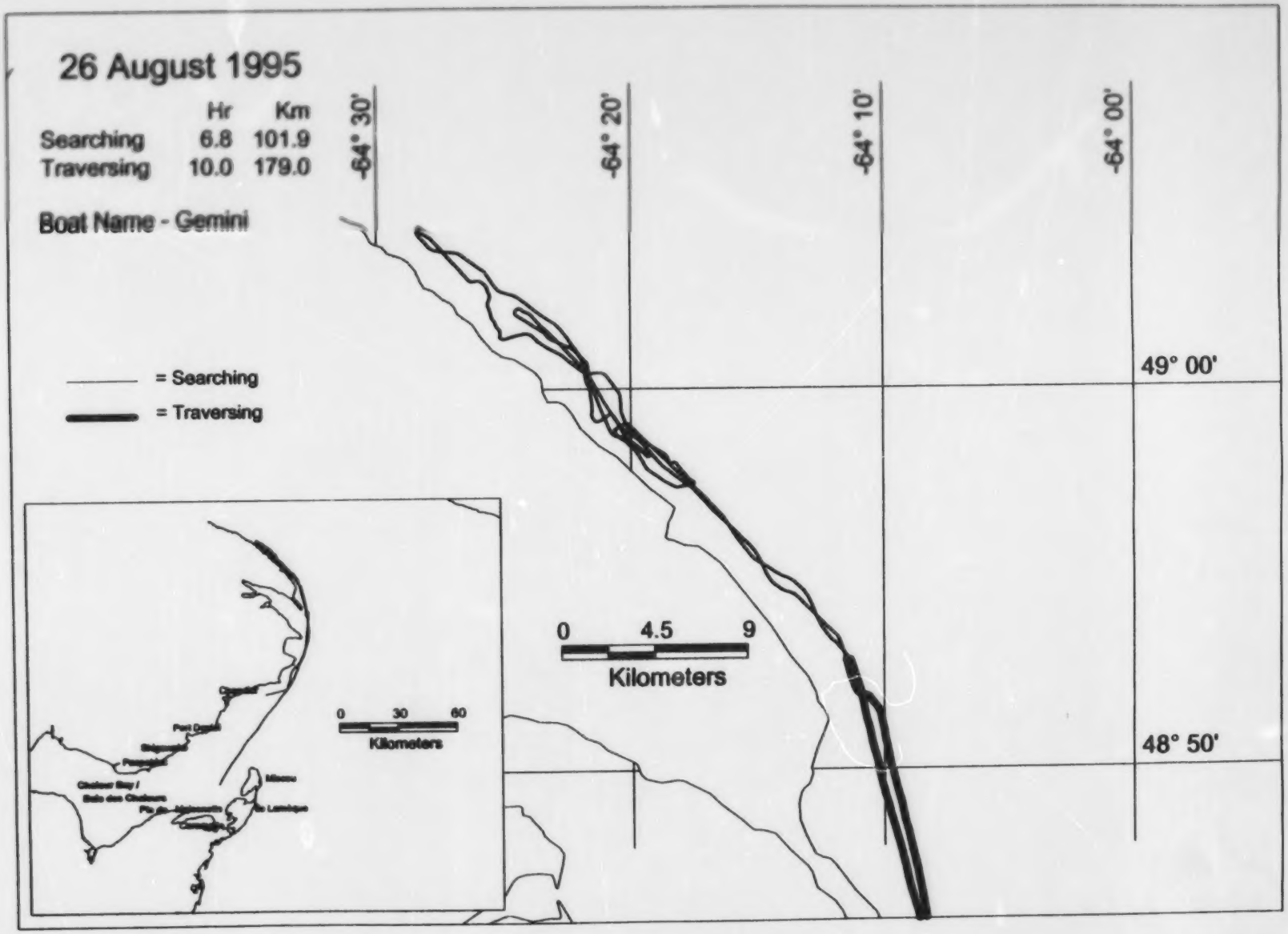
-64° 10'
-64° 00'
49° 00'
48° 50'


26 August 1995
Hr Km
Searching 6.8 101.9
Traversing 10.0 179.0
Boat Name - Gemini
= Searching
= Traversing
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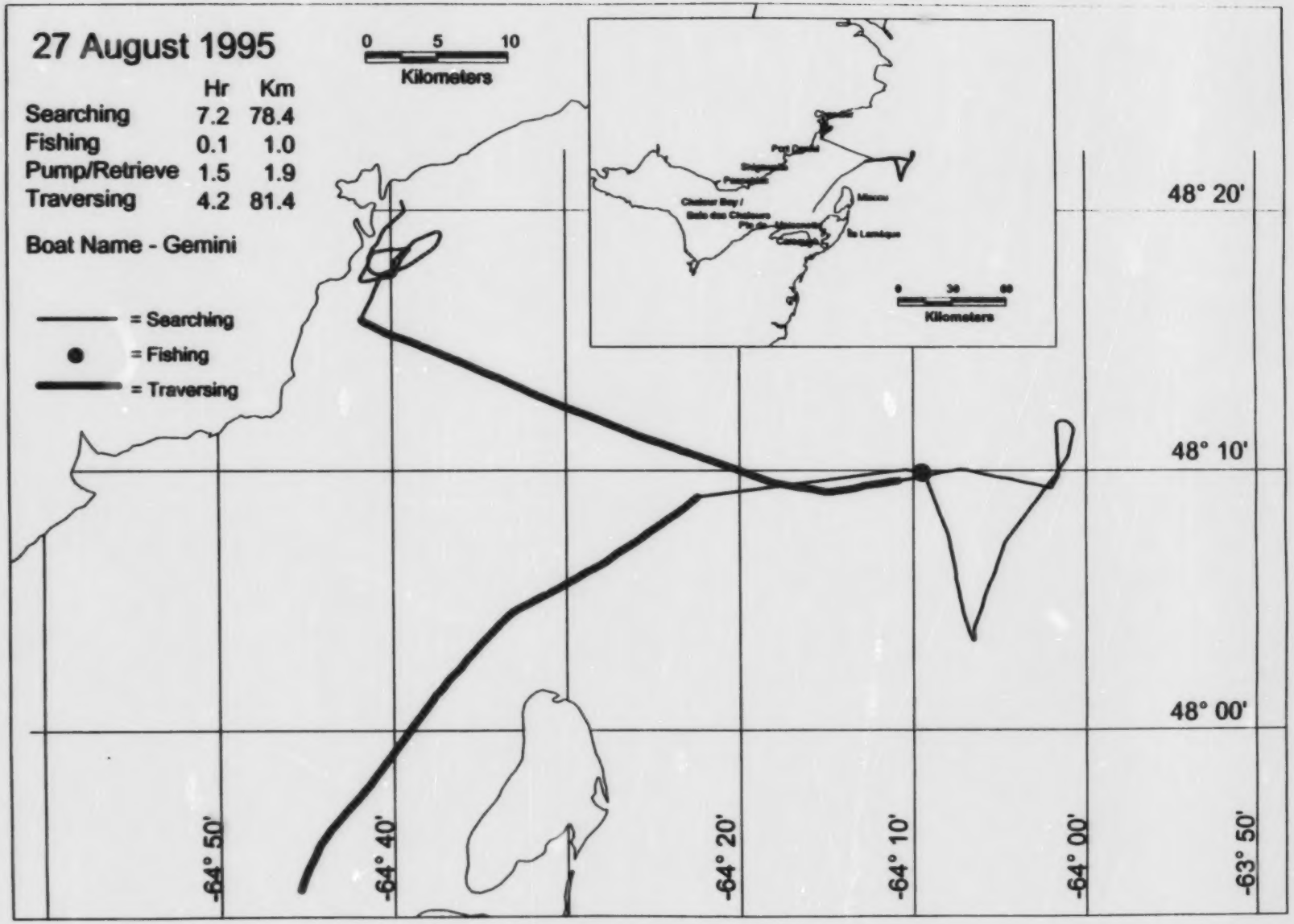
-64° 10'
-64° 00'
49° 00'
48° 50'
0 4.5 9
Kilometers
0 30 60
Kilometers


27 August 1995
Hr Km
Searching 7.2 78.4
Fishing 0.1 1.0
Pump/Retrieve 1.5 1.9
Traversing 4.2 81.4
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
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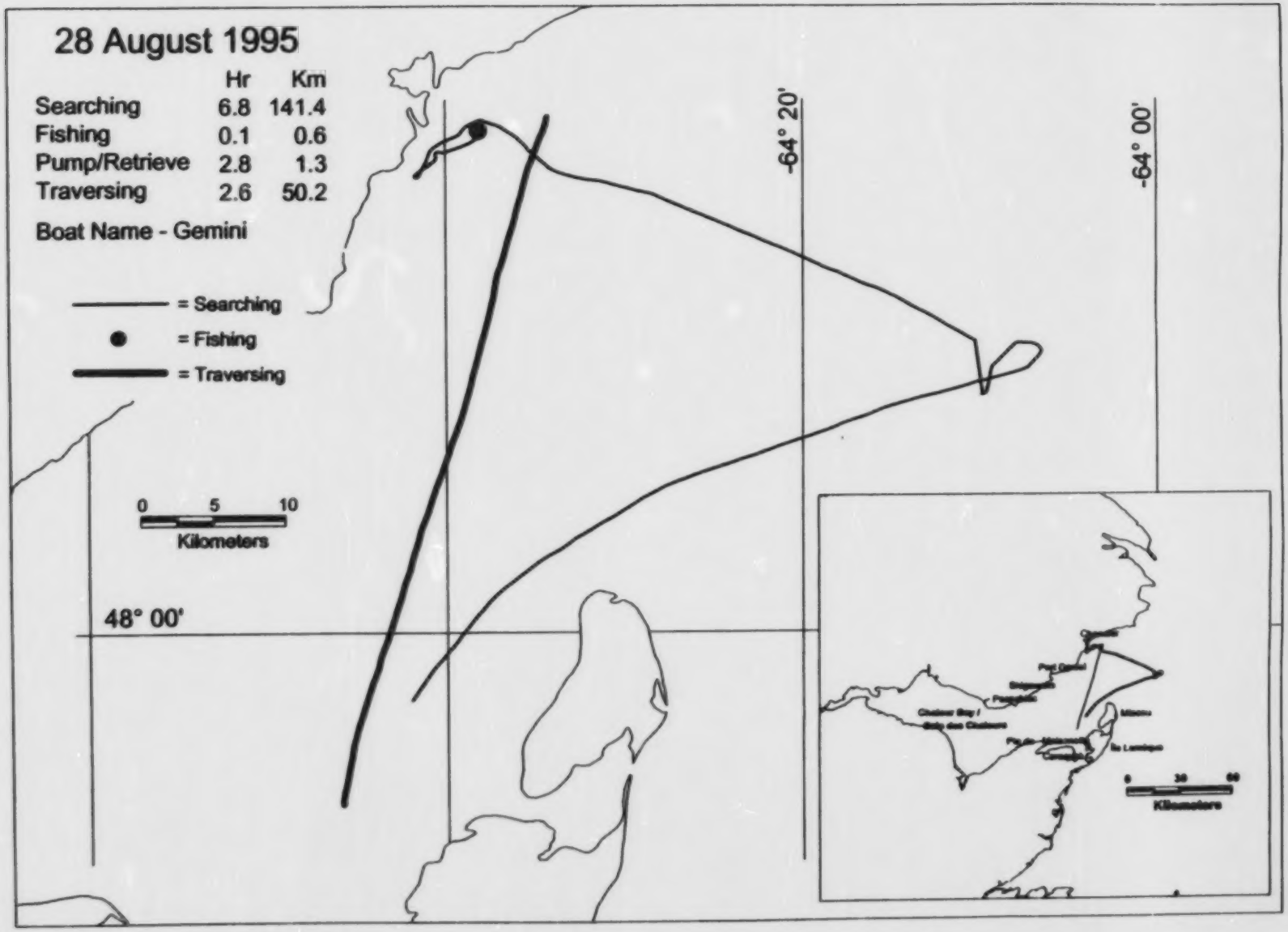
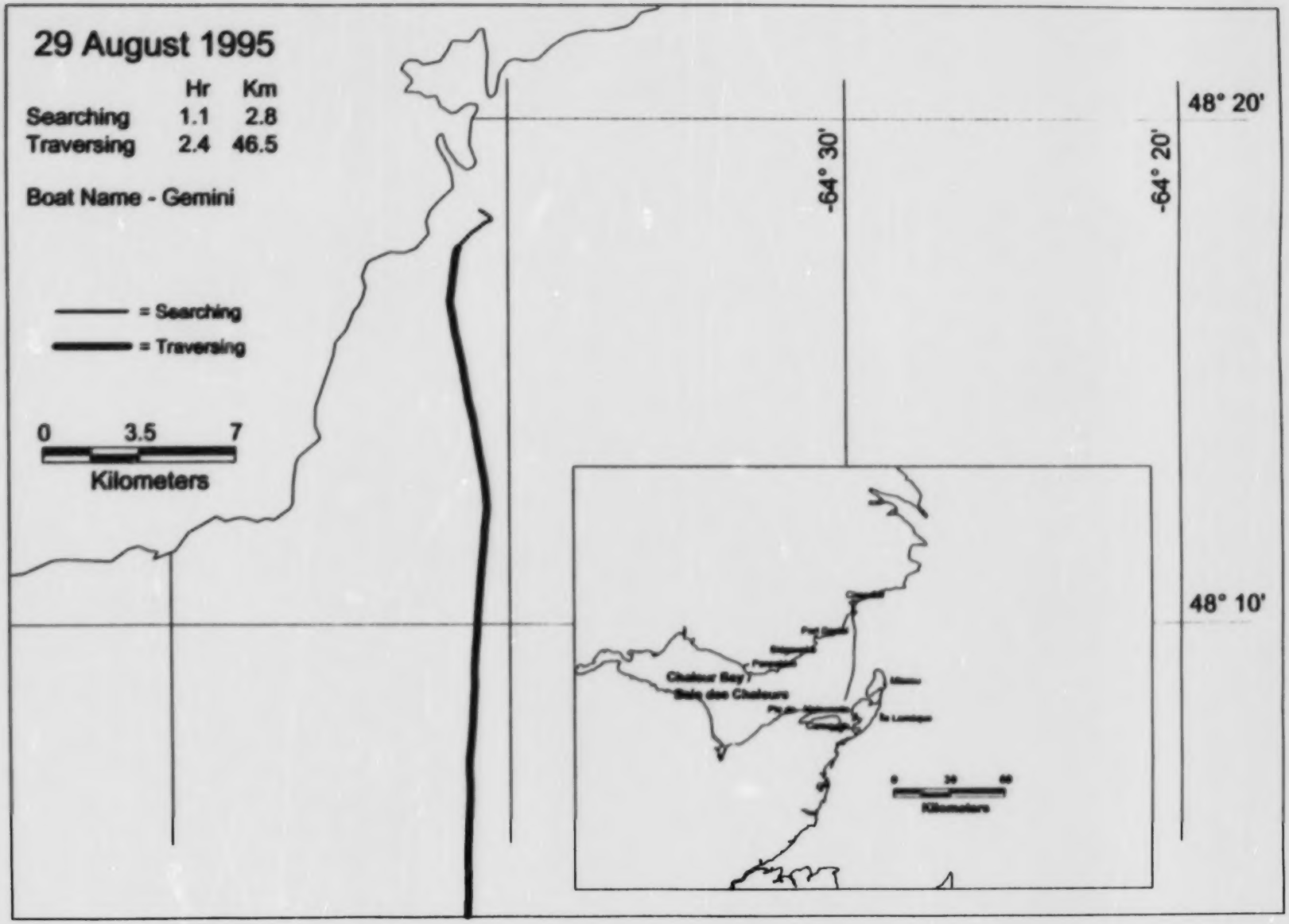
48° 10'
48° 00'
-64° 50'
-64° 40'
-64° 20'
-64° 10'
-64° 00'
-63° 50'


28 August 1995
Hr Km
Searching 6.8 141.4
Fishing 0.1 0.6
Pump/Retrieve 2.8 1.3
Traversing 2.6 50.2
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
48° 00'
-64° 20'
-64° 00'


29 August 1995
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Searching 1.1 2.8
Traversing 2.4 46.5
Boat Name - Gemini
= Searching
= Traversing
0 3.5 7
Kilometers
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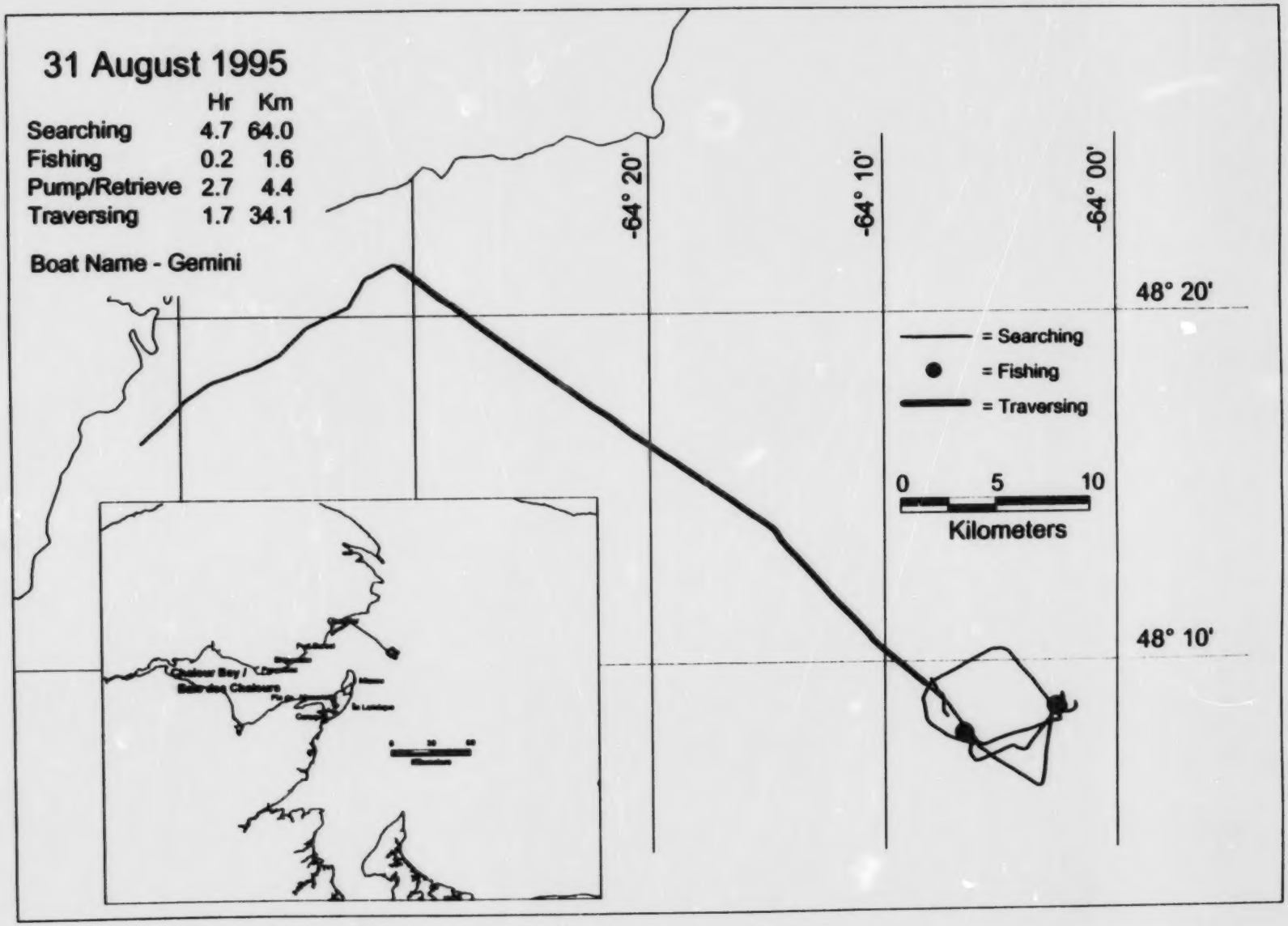
-64° 30'
-64° 20'
48° 10'
Chaleur Bay
Baie des Chaleurs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Fishing 0.2 1.6
Pump/Retrieve 2.7 4.4
Traversing 1.7 34.1
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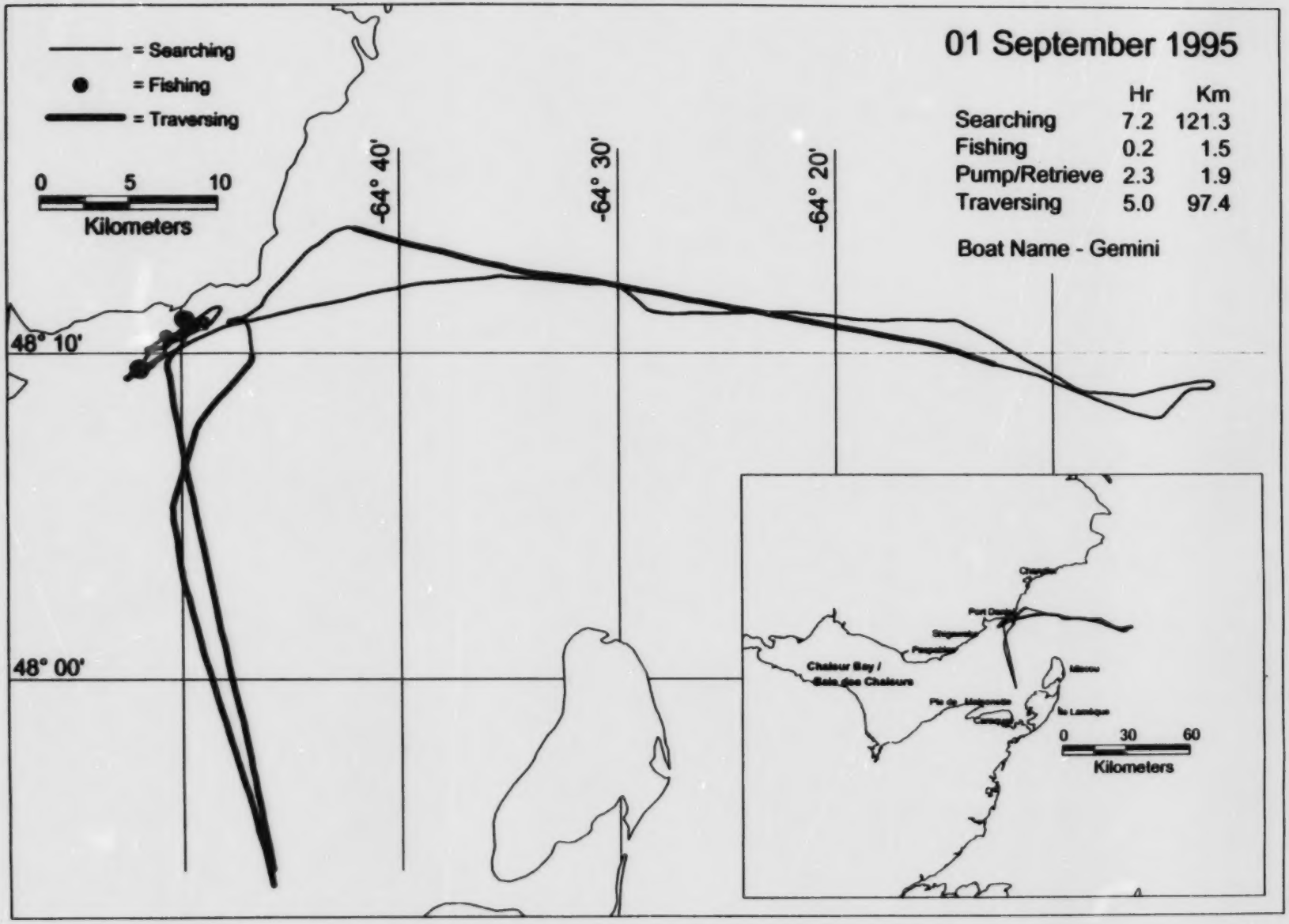
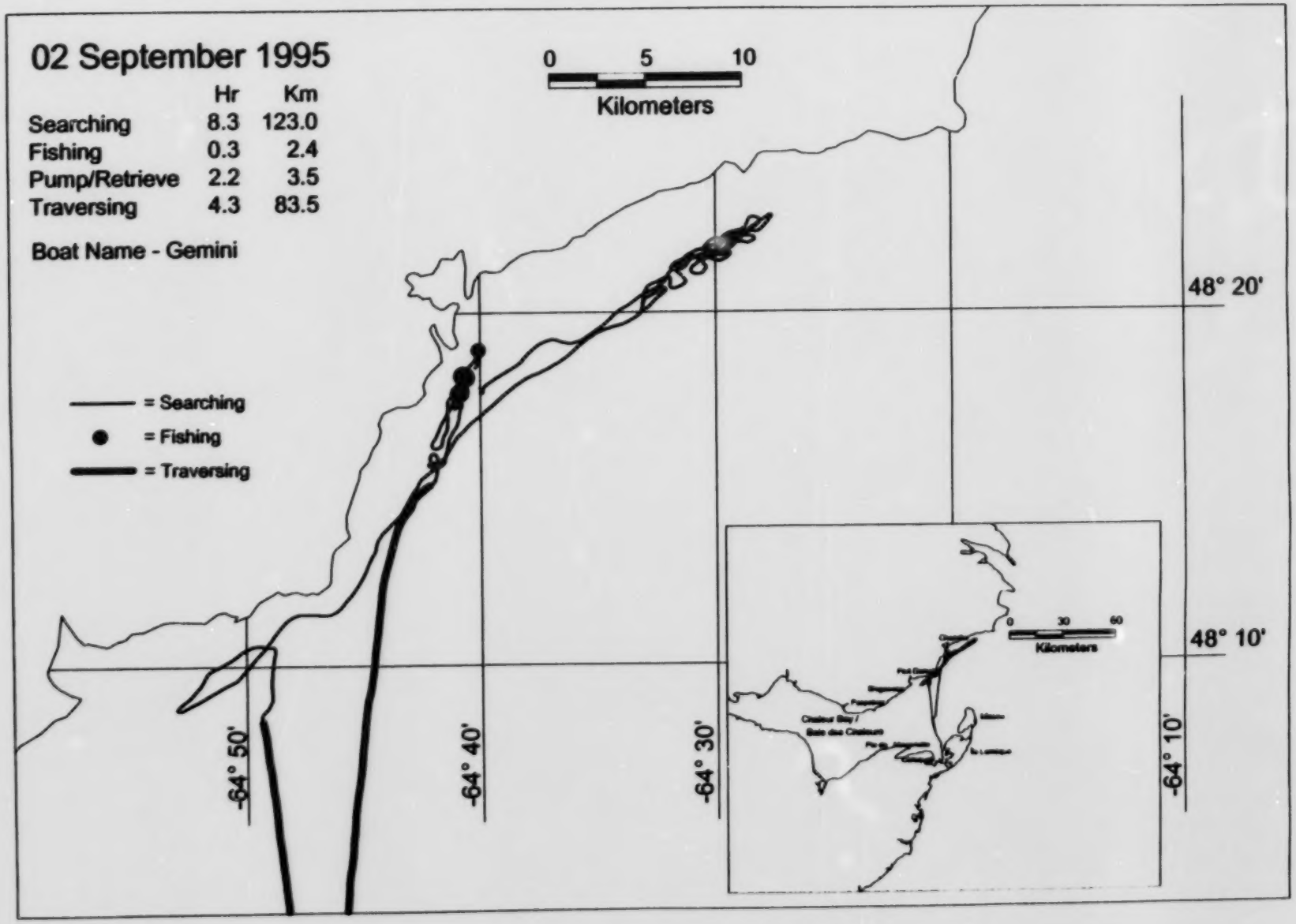
-64° 00'
48° 20'
48° 10'
= Searching
= Fishing
= Traversing
0 5 10
Kilometers


= Searching
= Fishing
= Traversing
0 5 10
Kilometers
-64° 40'
-64° 30'
-64° 20'
48° 10'
48° 00'
01 September 1995
Hr Km
Searching 7.2 121.3
Fishing 0.2 1.5
Pump/Retrieve 2.3 1.9
Traversing 5.0 97.4
Boat Name - Gemini
Chaleur Bay /
Baie des Chaleurs
0 30 60
Kilometers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Hr Km
Searching 8.3 123.0
Fishing 0.3 2.4
Pump/Retrieve 2.2 3.5
Traversing 4.3 83.5
Boat Name - Gemini
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
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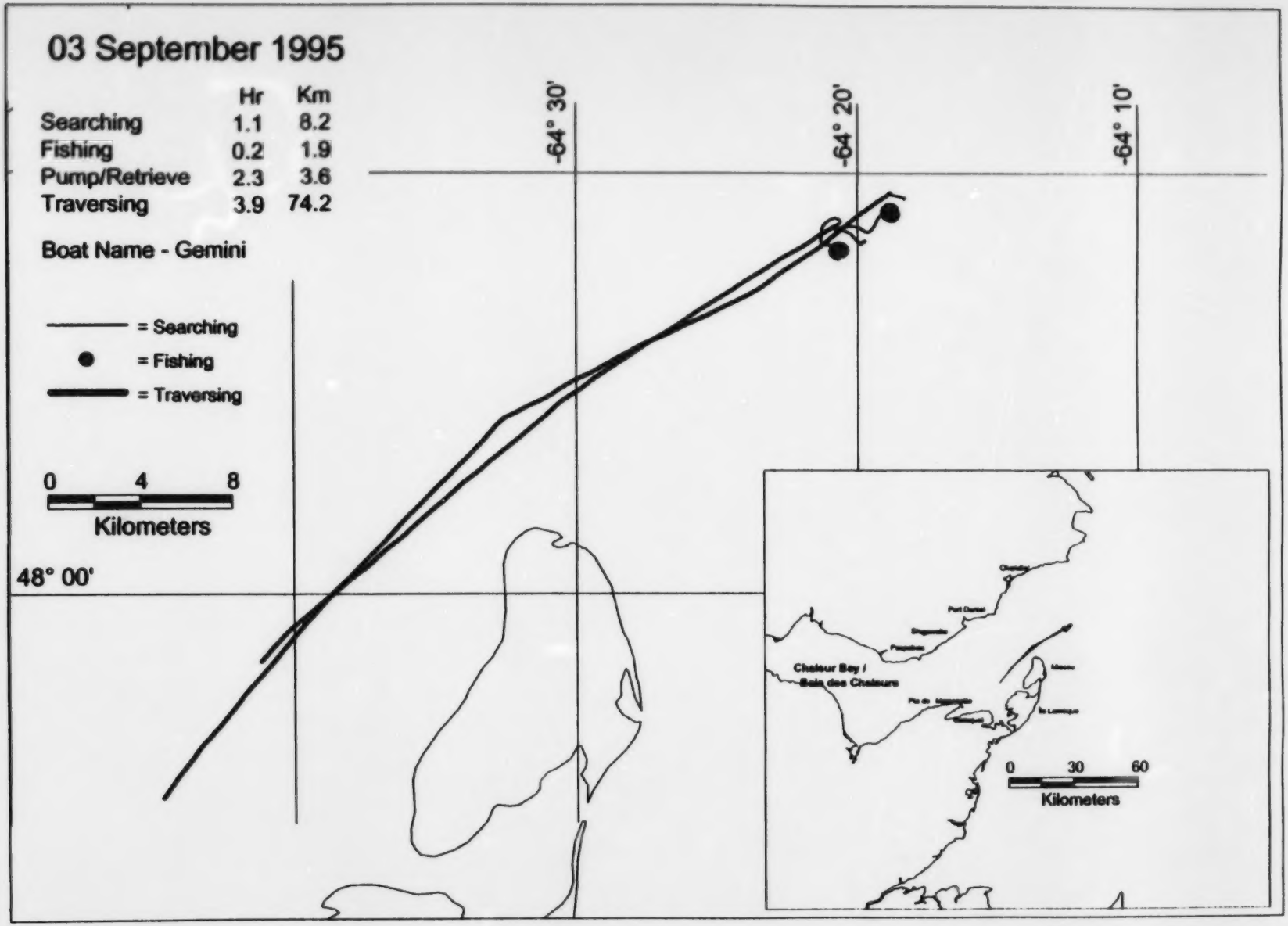
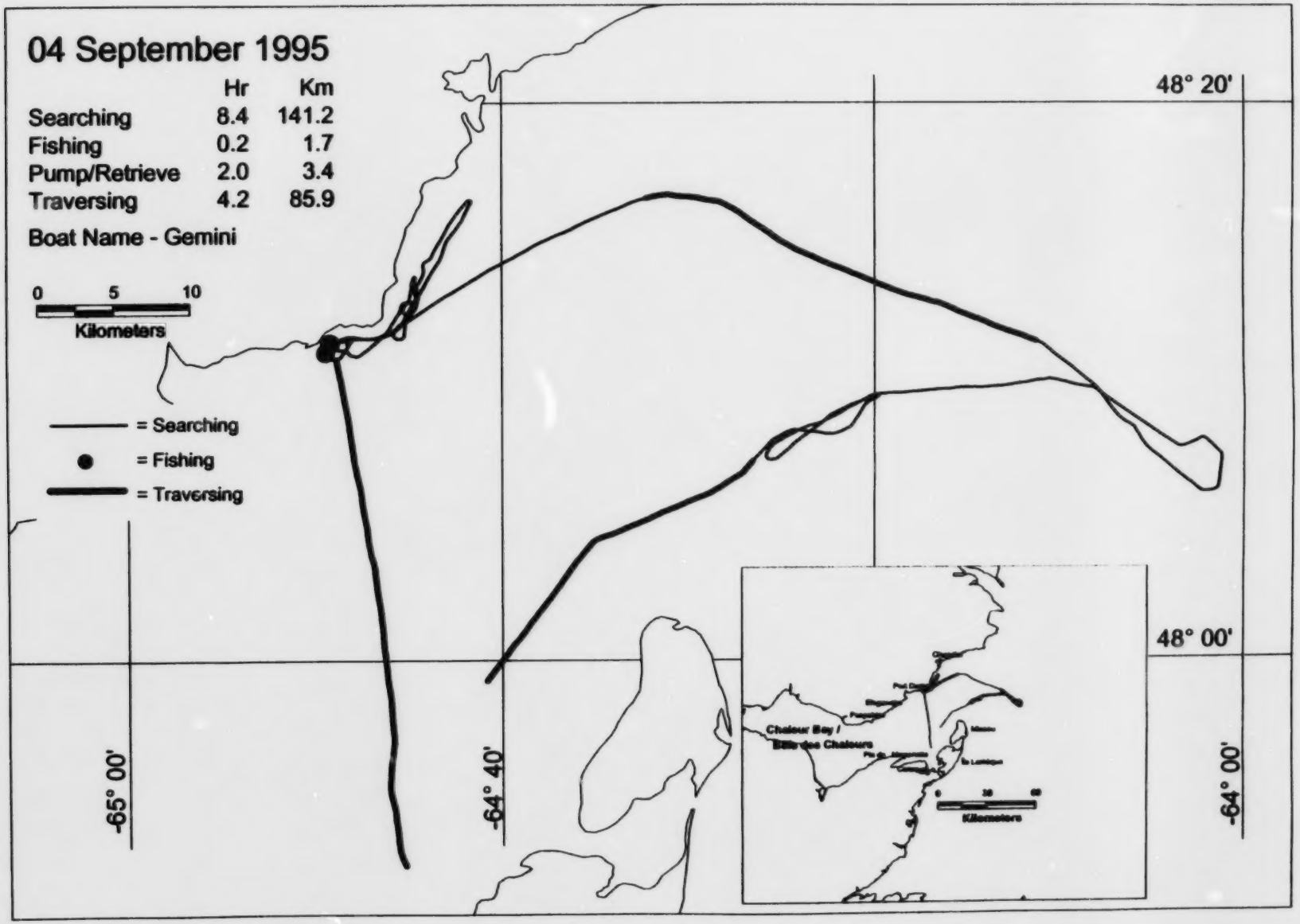
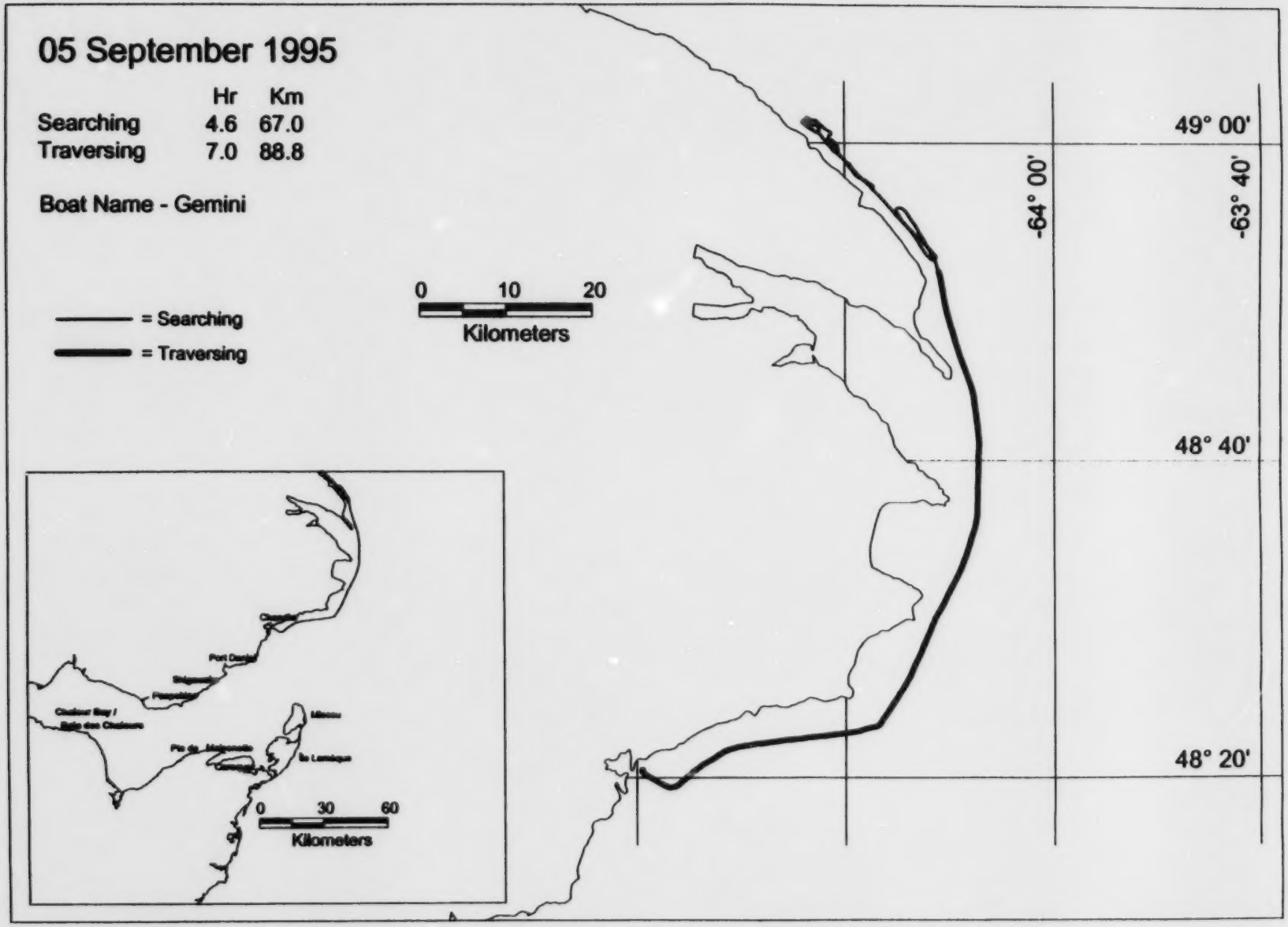
48° 10'
-64° 50'
-64° 40'
-64° 30'
-64° 10'
0 30 60
Kilometers


03 September 1995
Hr Km
Searching 1.1 8.2
Fishing 0.2 1.9
Pump/Retrieve 2.3 3.6
Traversing 3.9 74.2
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 4 8
Kilometers
48° 00'
-64° 30'
-64° 20'
-64° 10'
Chaleur Bay /
Baie des Chaleurs
0 30 60
Kilometers


04 September 1995
Hr Km
Searching 8.4 141.2
Fishing 0.2 1.7
Pump/Retrieve 2.0 3.4
Traversing 4.2 85.9
Boat Name - Gemini
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
48° 20'
48° 00'
-65° 00'
-64° 40'
-64° 00'
Chaleur Bay /
Baie des Chaleurs
Kilometers


05 September 1995
Hr Km
Searching 4.6 67.0
Traversing 7.0 88.8
Boat Name - Gemini
= Searching
= Traversing
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Kilometers
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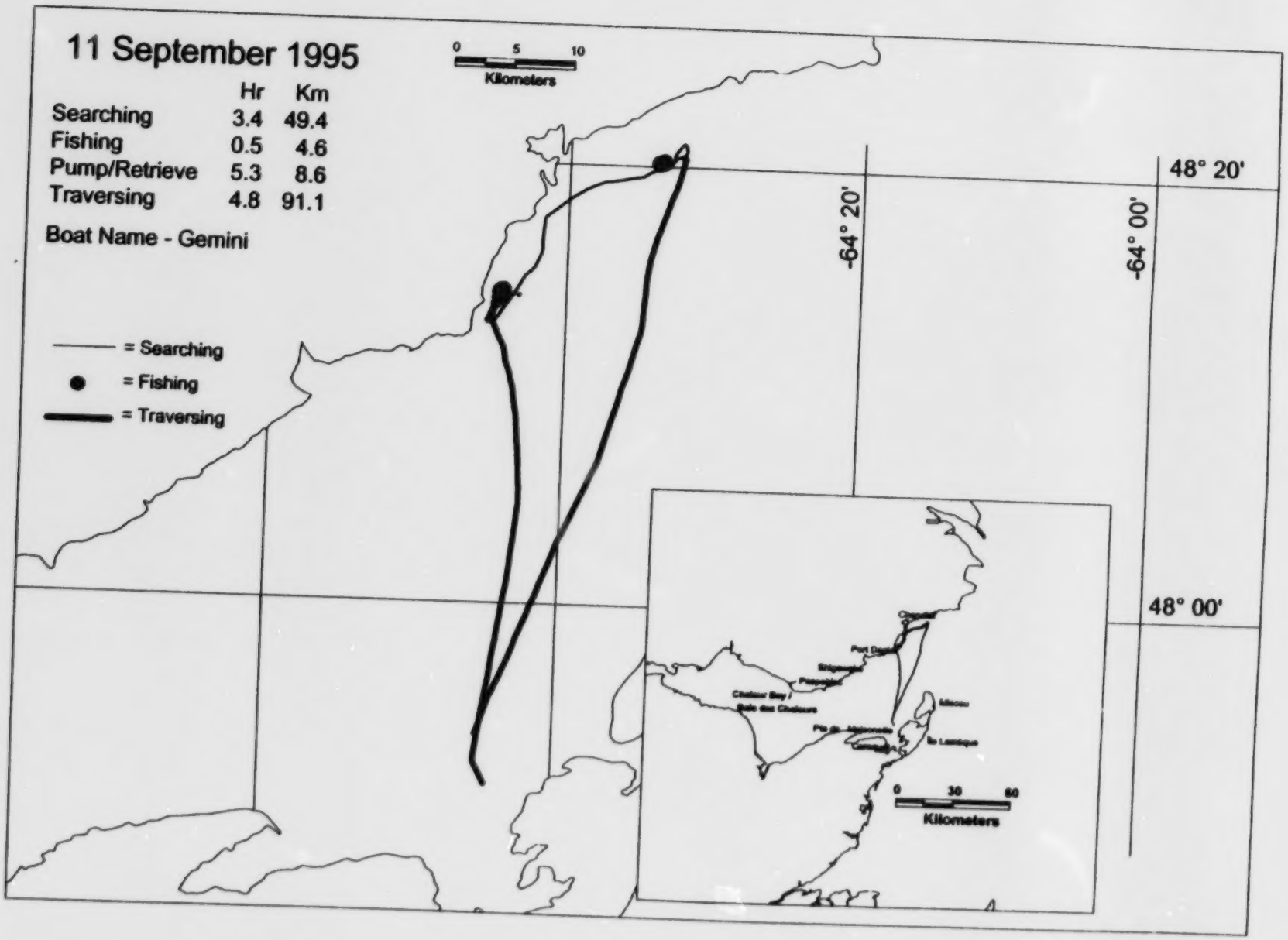
48° 40'
48° 20'
0 30 60
Kilometers


11 September 1995
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Fishing 0.5 4.6
Pump/Retrieve 5.3 8.6
Traversing 4.8 91.1
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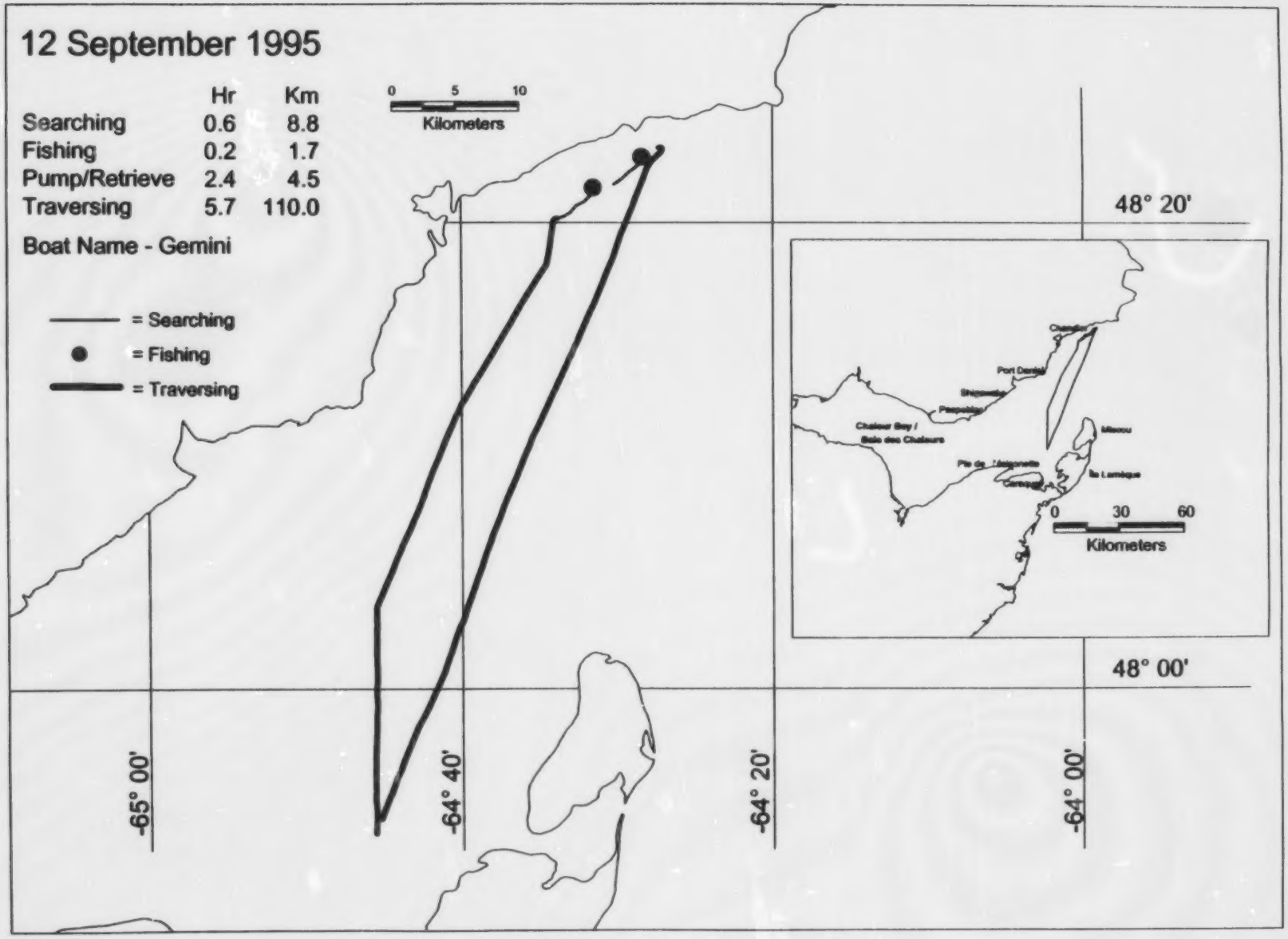
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
-64° 20'
-64° 00'
48° 20'
48° 00'
0 30 60
Kilometers


12 September 1995
Hr Km
Searching 0.6 8.8
Fishing 0.2 1.7
Pump/Retrieve 2.4 4.5
Traversing 5.7 110.0
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= Searching
= Fishing
= Traversing
0 5 10
Kilometers
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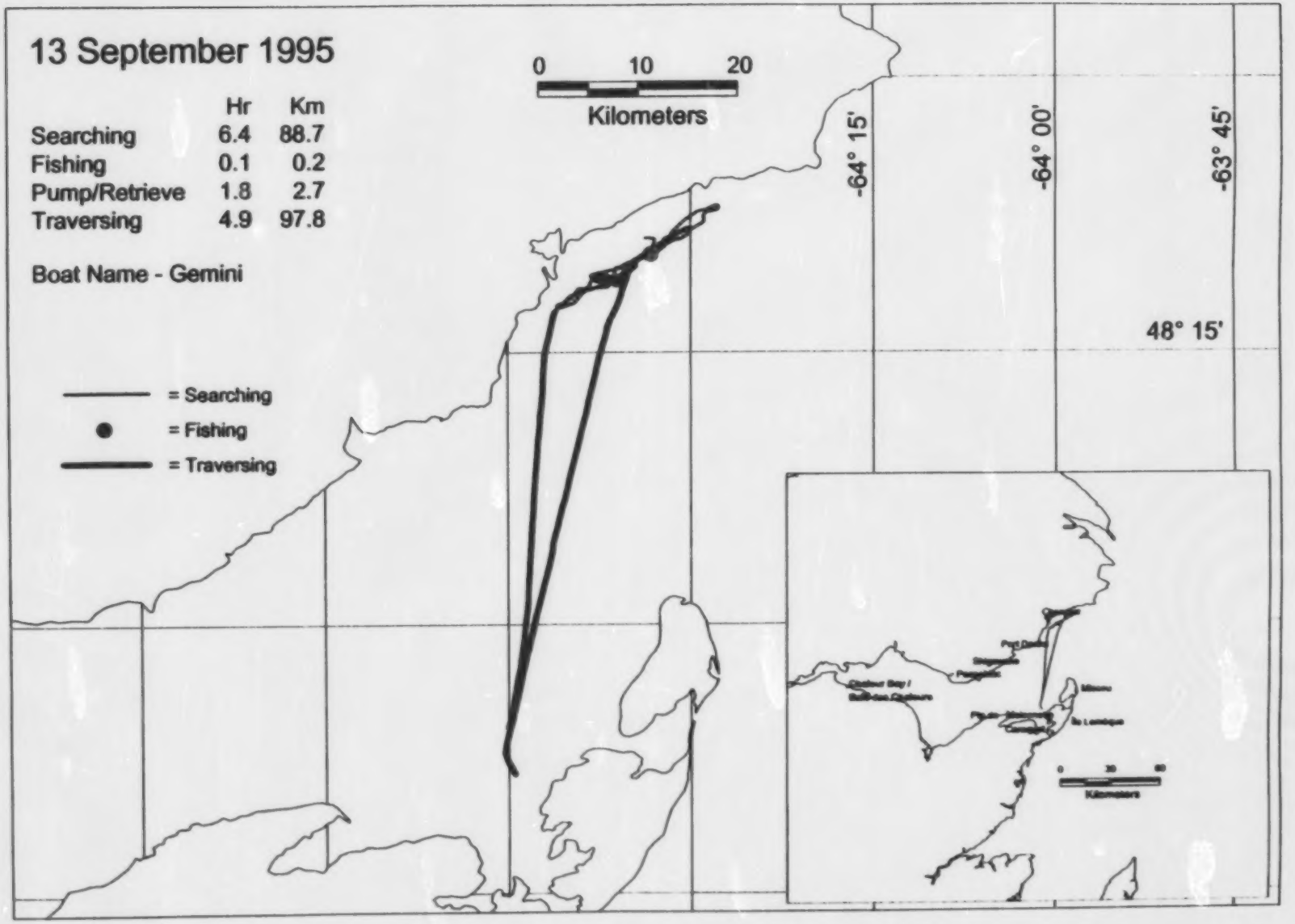
48° 00'
-65° 00'
-64° 40'
-64° 20'
-64° 00'
0 30 60
Kilometers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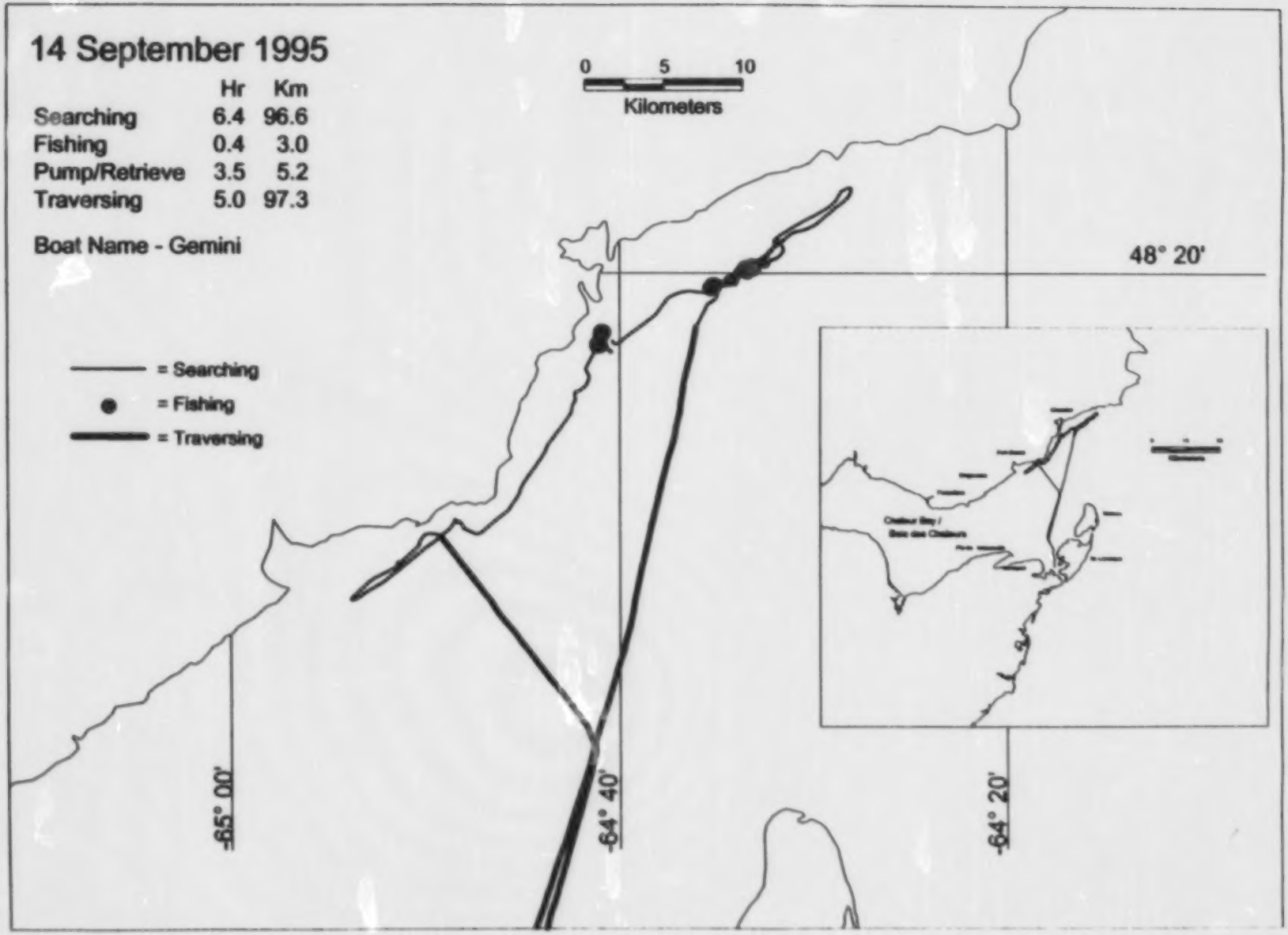
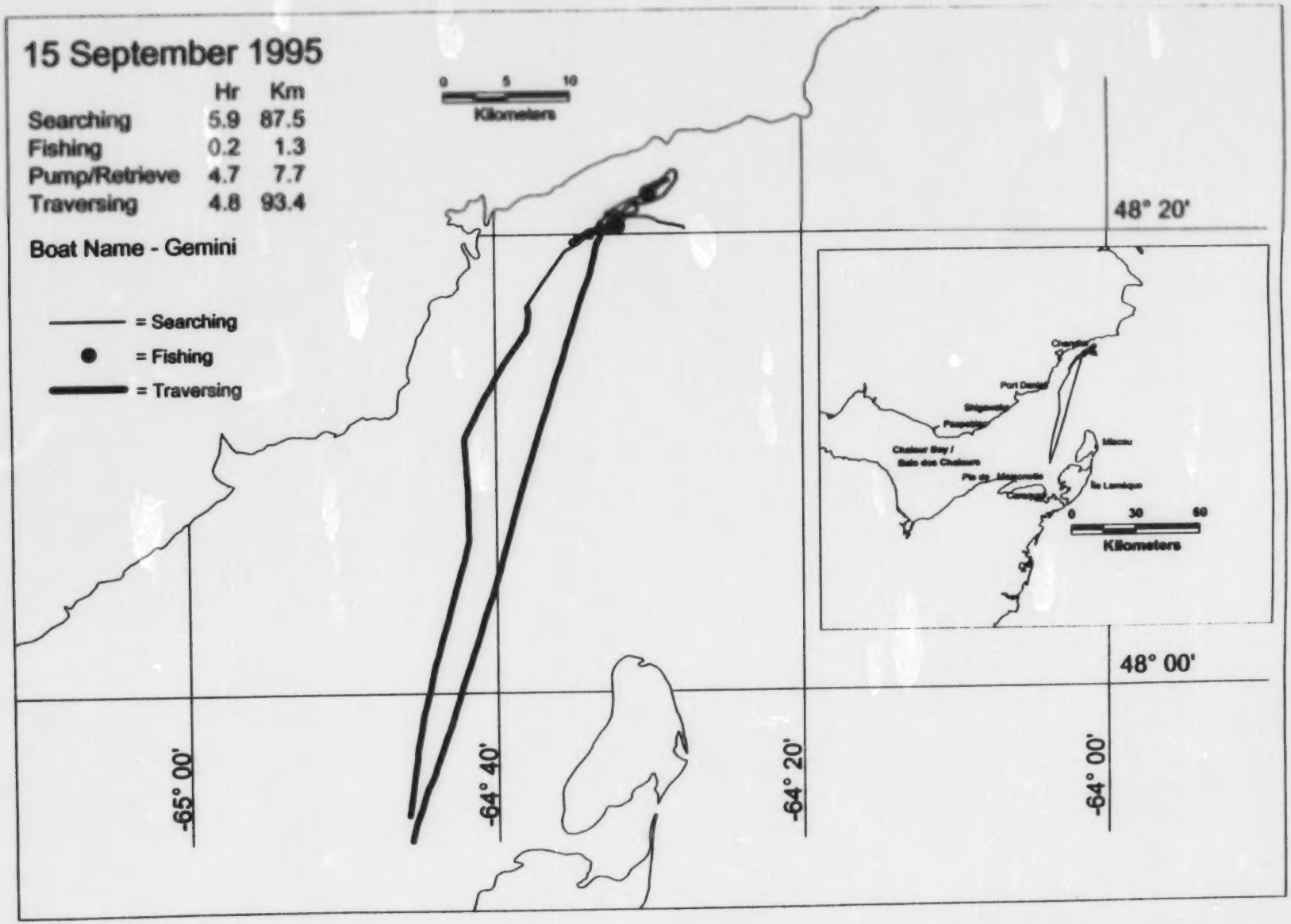
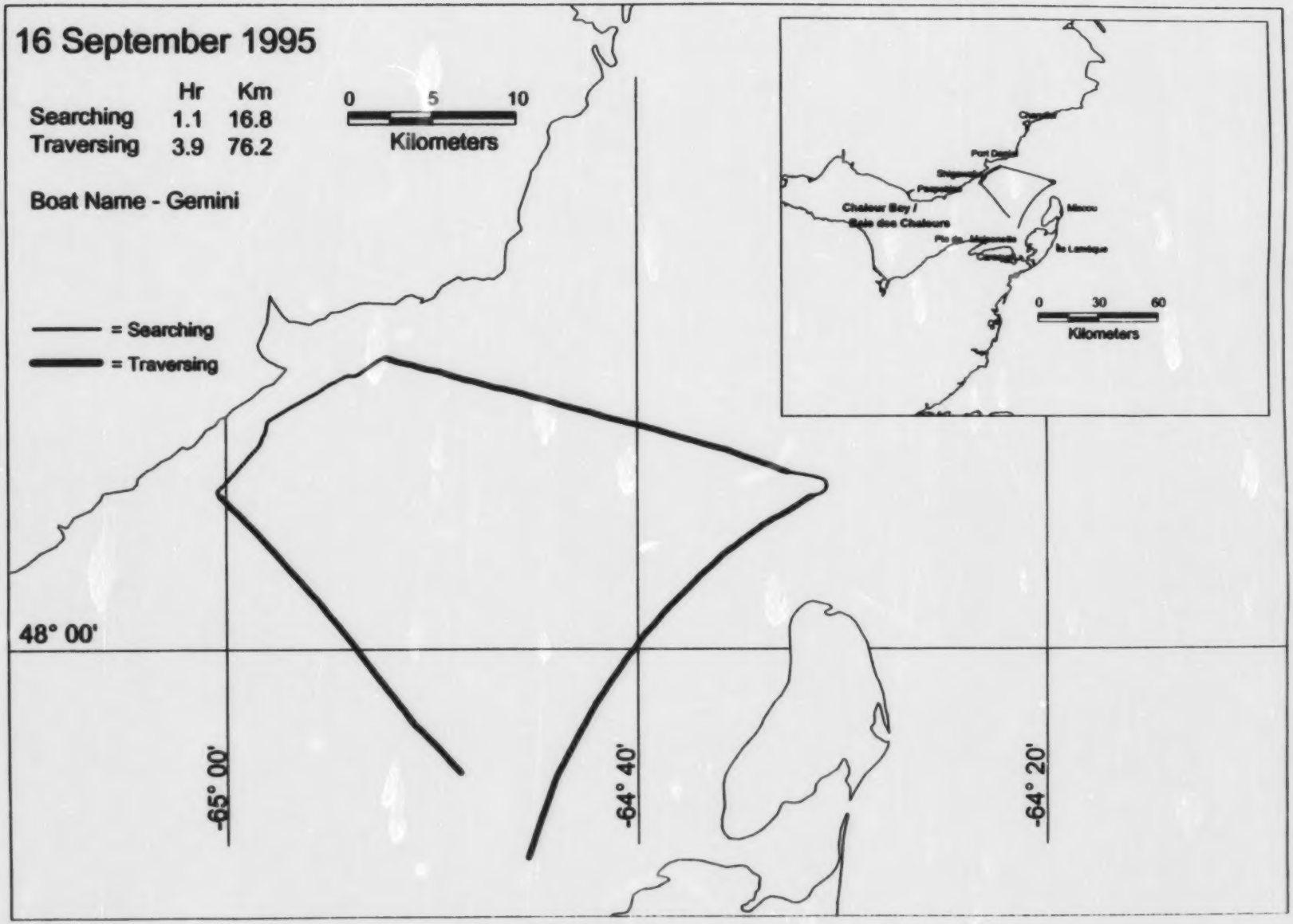
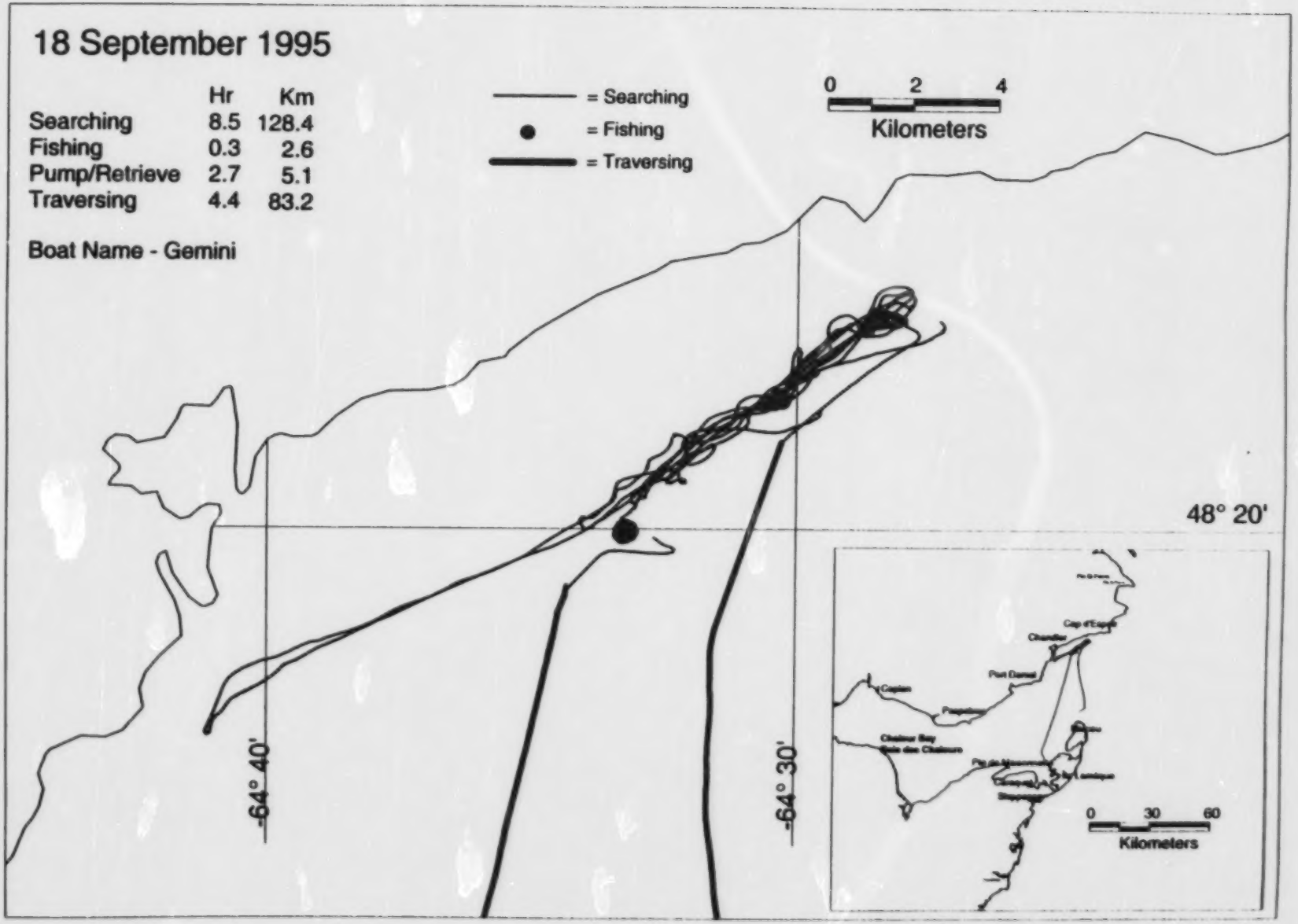
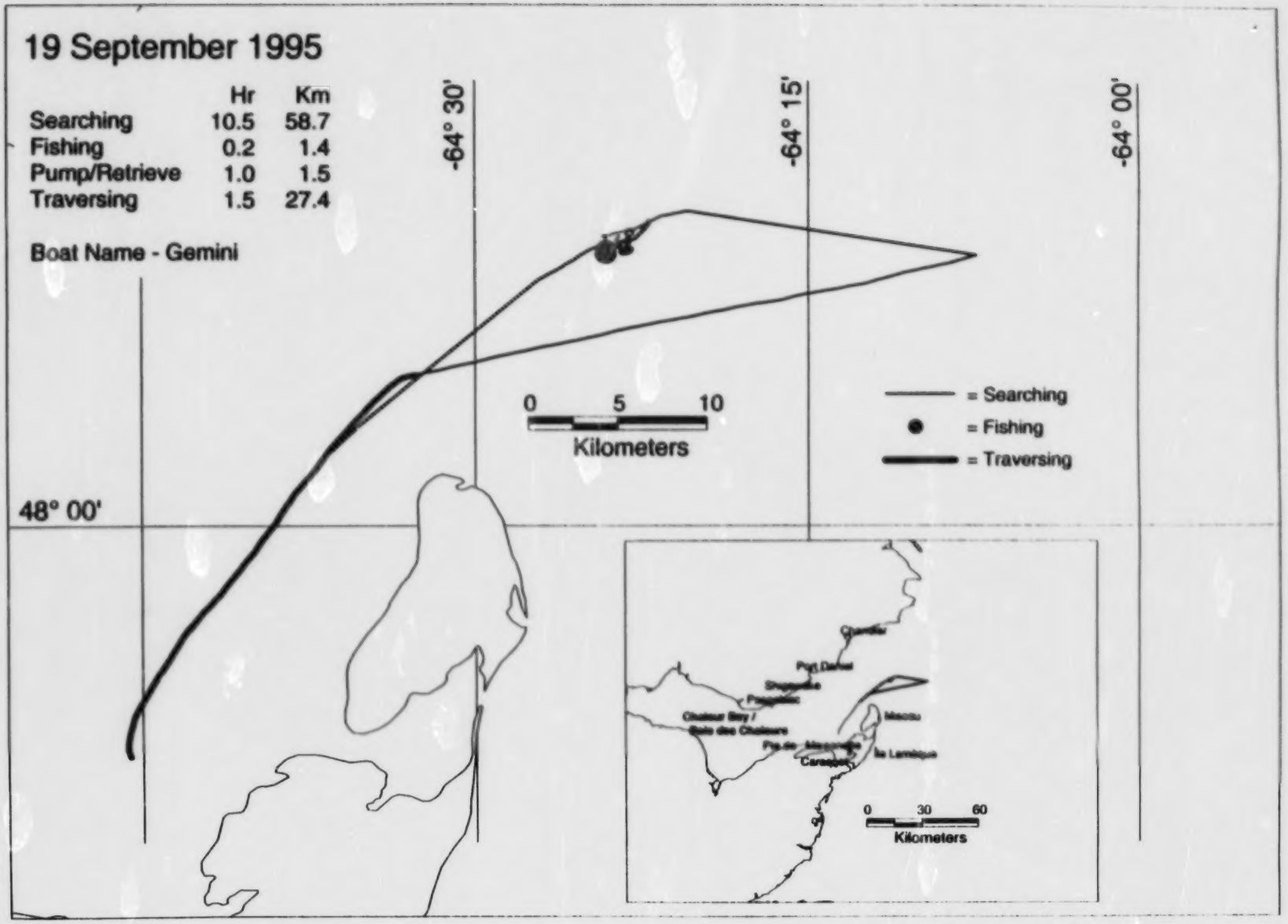
Fishing 0.1 0.2
Pump/Retrieve 1.8 2.7
Traversing 4.9 97.8
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 10 20
Kilometers
-64° 15'
-64° 00'
-63° 45'
48° 15'

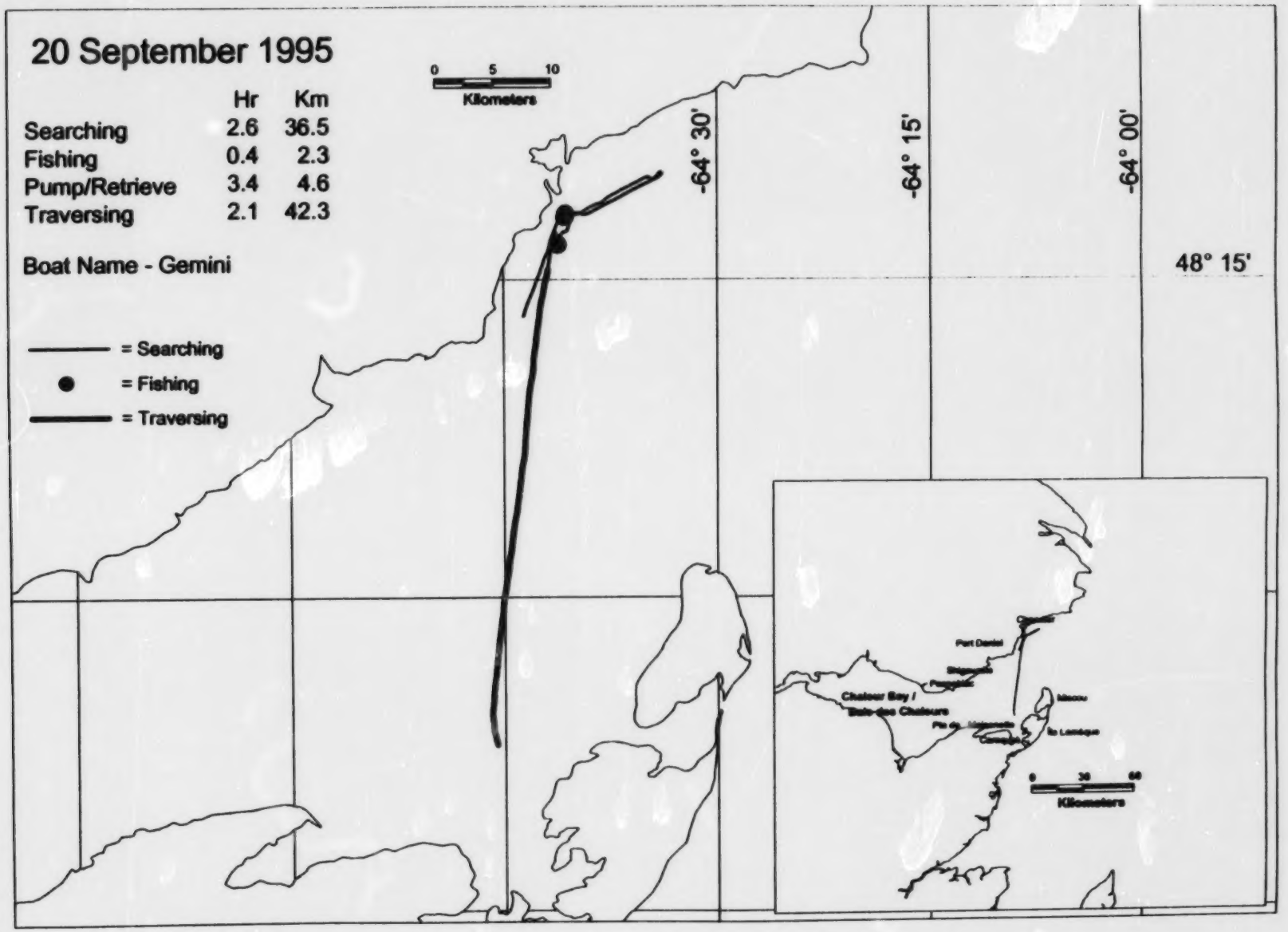

14 September 1995
Hr Km
Searching 6.4 96.6
Fishing 0.4 3.0
Pump/Retrieve 3.5 5.2
Traversing 5.0 97.3
Boat Name - Gemini
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
48° 20'
65° 00'
64° 40'
64° 20'

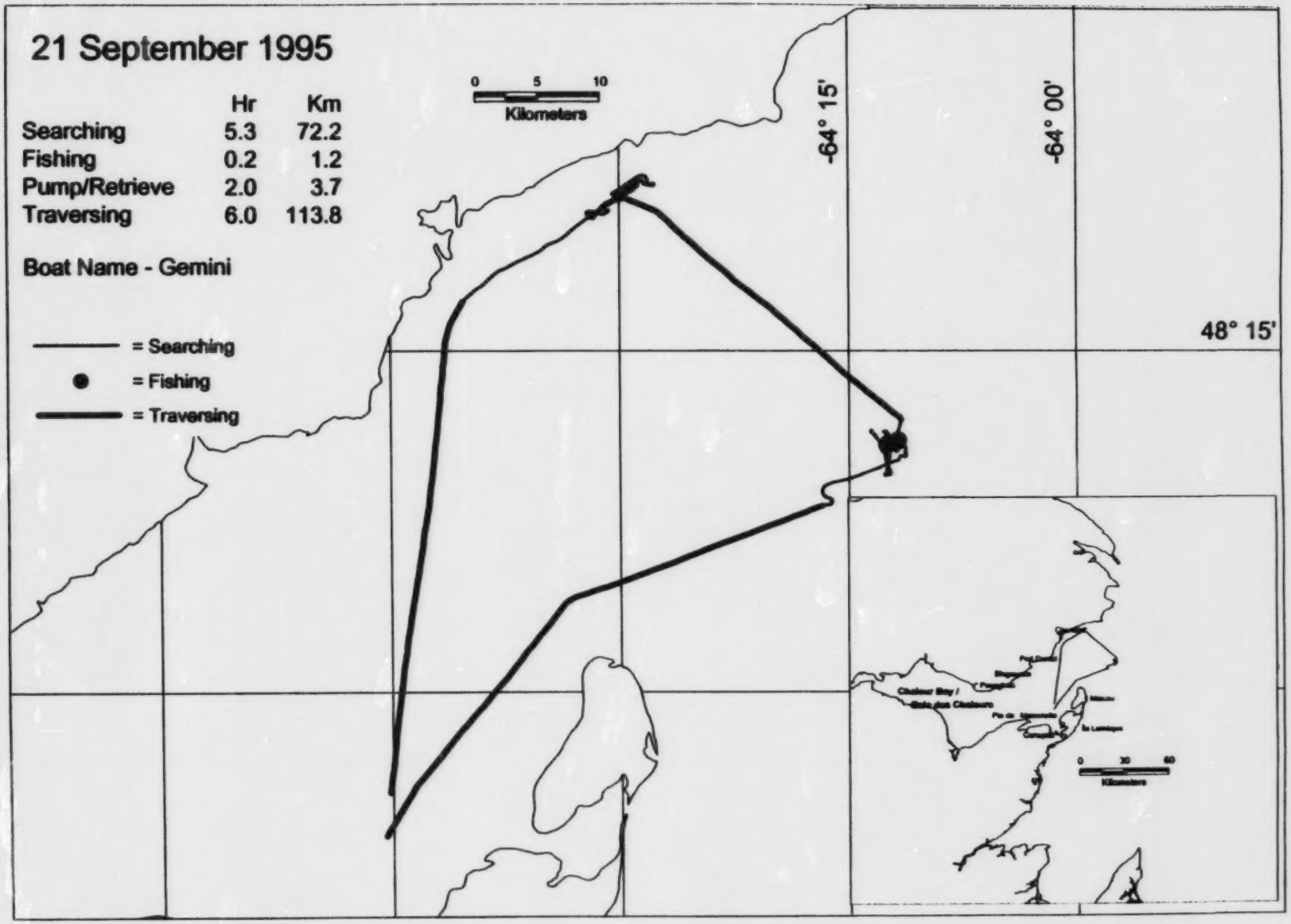

15 September 1995
Hr Km
Searching 5.9 87.5
Fishing 0.2 1.3
Pump/Retrieve 4.7 7.7
Traversing 4.8 93.4
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
48° 20'
48° 00'
-65° 00'
-64° 40'
-64° 20'
-64° 00'
Port Daniel
Chaleur Bay / Baie des Chaleurs
Miscou
Ile Lamèque
0 30 60
Kilometers

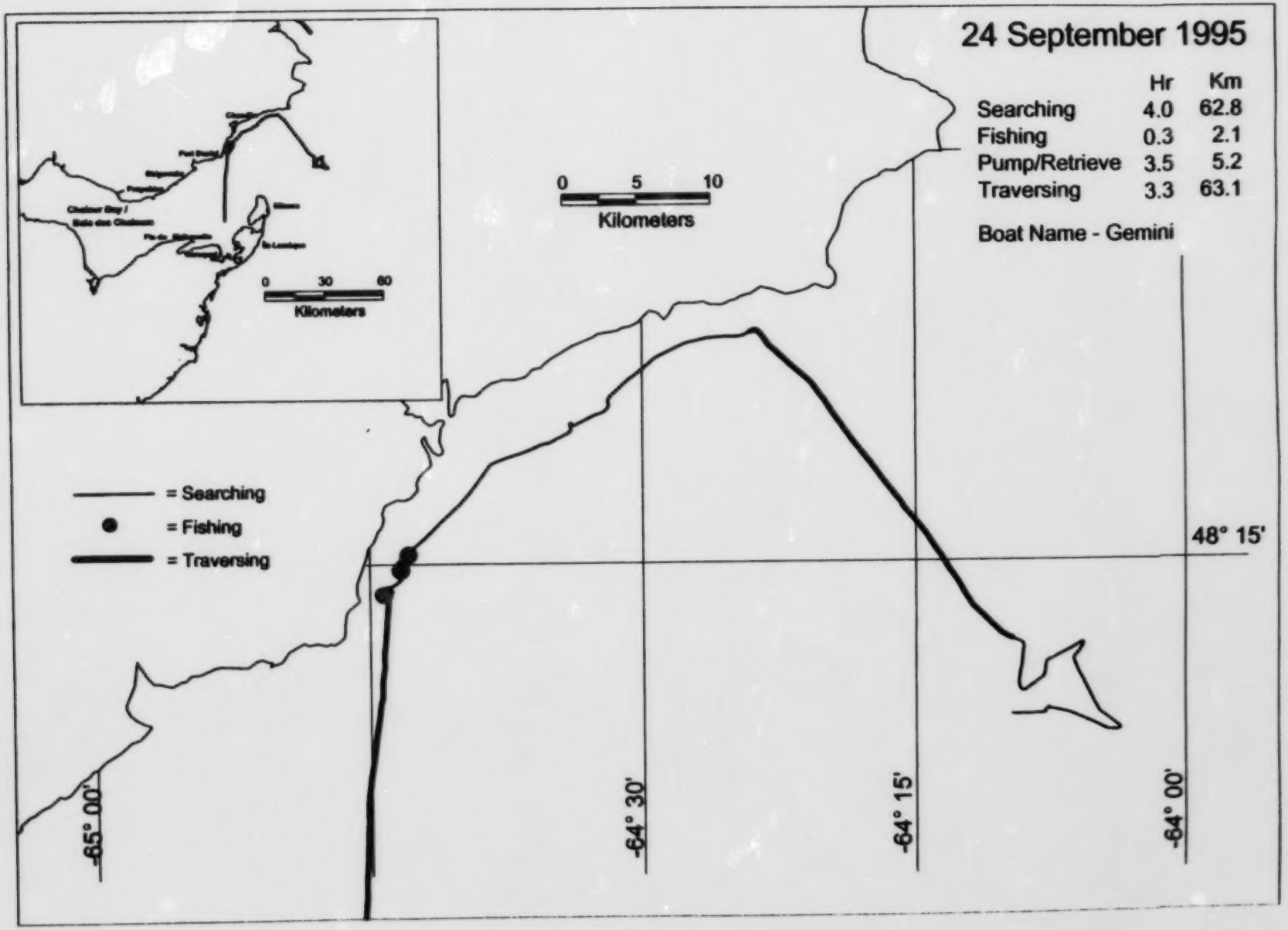

16 September 1995
Hr Km
Searching 1.1 16.8
Traversing 3.9 76.2
Boat Name - Gemini
0 5 10
Kilometers
= Searching
= Traversing
48° 00'
-65° 00'
-64° 40'
-64° 20'
Chaleur Bay /
Baie des Chaleurs
Miscou
Ile Lamèque
0 30 60
Kilometers

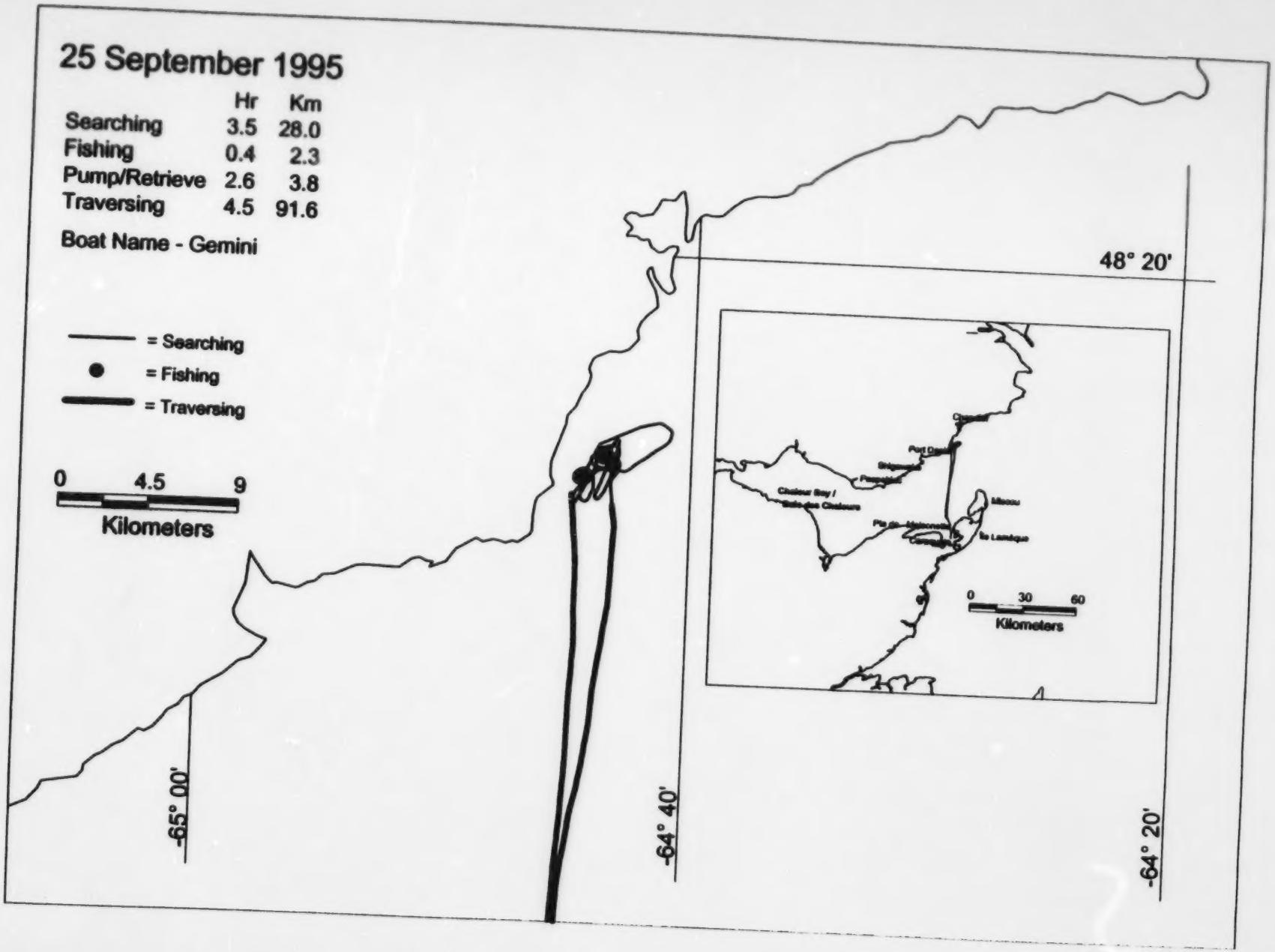

18 September 1995
Hr Km
Searching 8.5 128.4
Fishing 0.3 2.6
Pump/Retrieve 2.7 5.1
Traversing 4.4 83.2
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 2 4
Kilometers
48° 20'
-64° 40'
-64° 30'
0 30 60
Kilometers

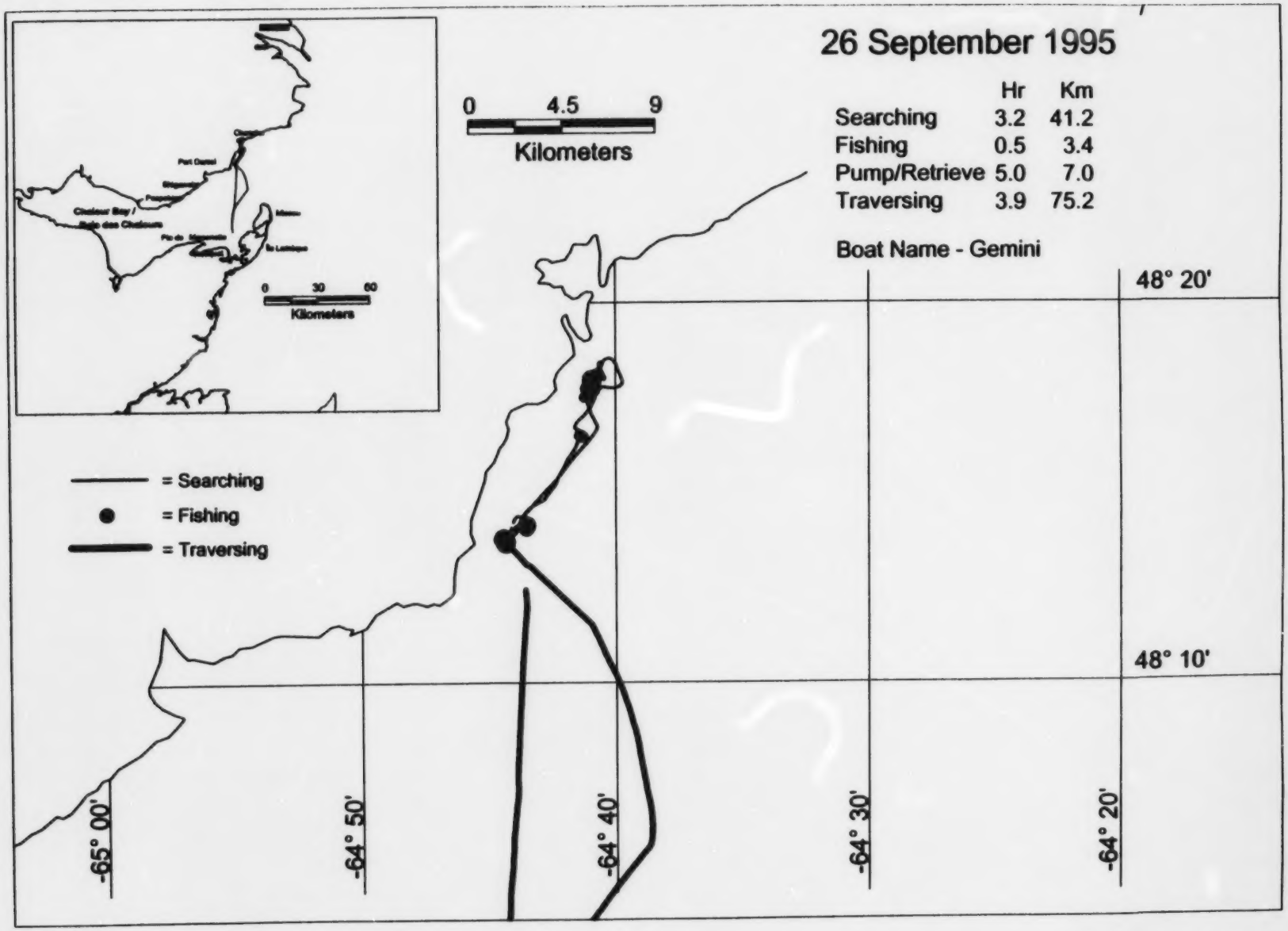

19 September 1995
Hr Km
Searching 10.5 58.7
Fishing 0.2 1.4
Pump/Retrieve 1.0 1.5
Traversing 1.5 27.4
Boat Name - Gemini
-64° 30'
-64° 15'
-64° 00'
48° 00'
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
0 30 60
Kilometers

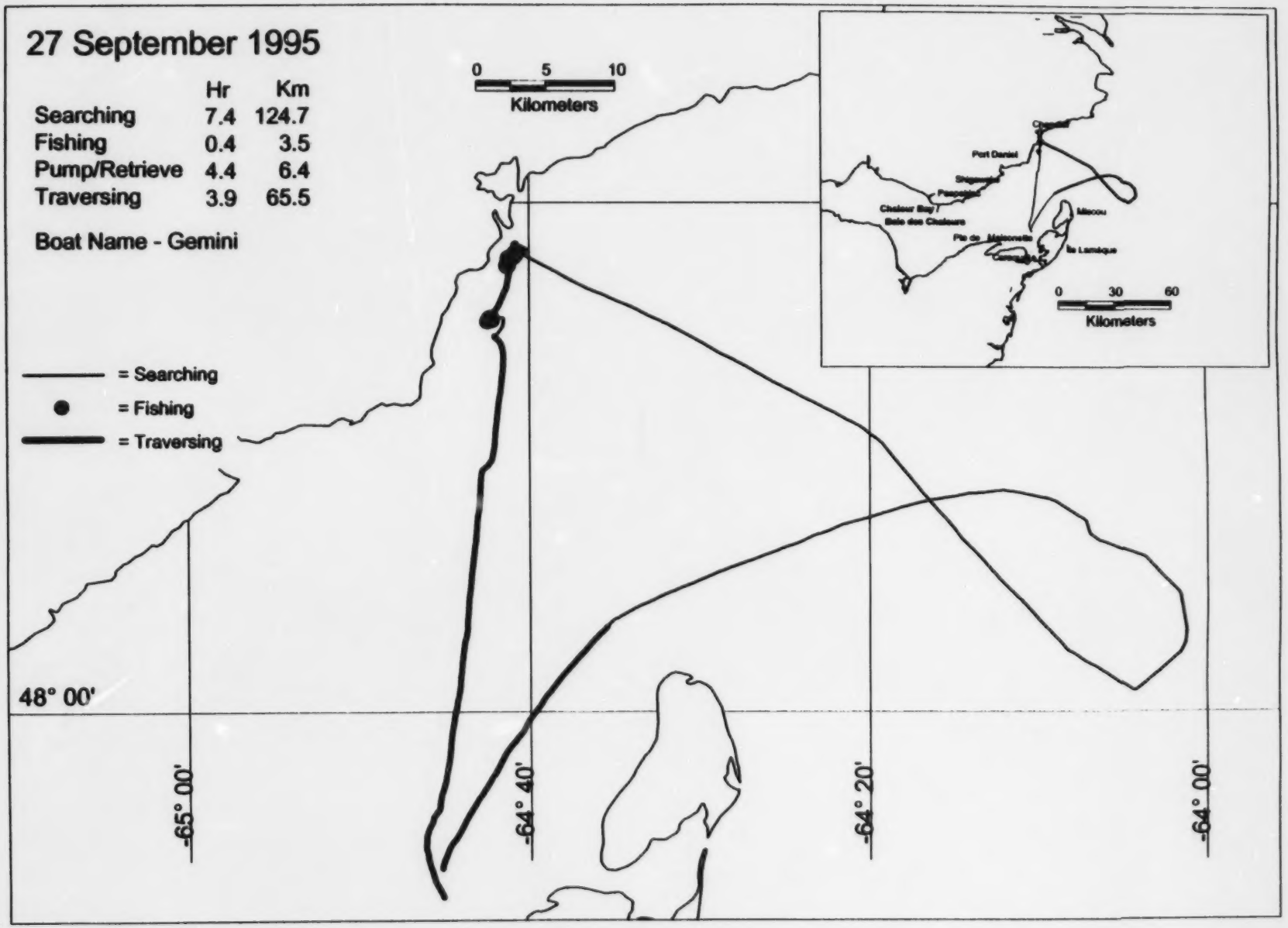

20 September 1995
Hr Km
Searching 2.6 36.5
Fishing 0.4 2.3
Pump/Retrieve 3.4 4.6
Traversing 2.1 42.3
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
-64° 30'
-64° 15'
-64° 00'
48° 15'
Chaleur Bay /
Baie des Chaleurs
Kilometers

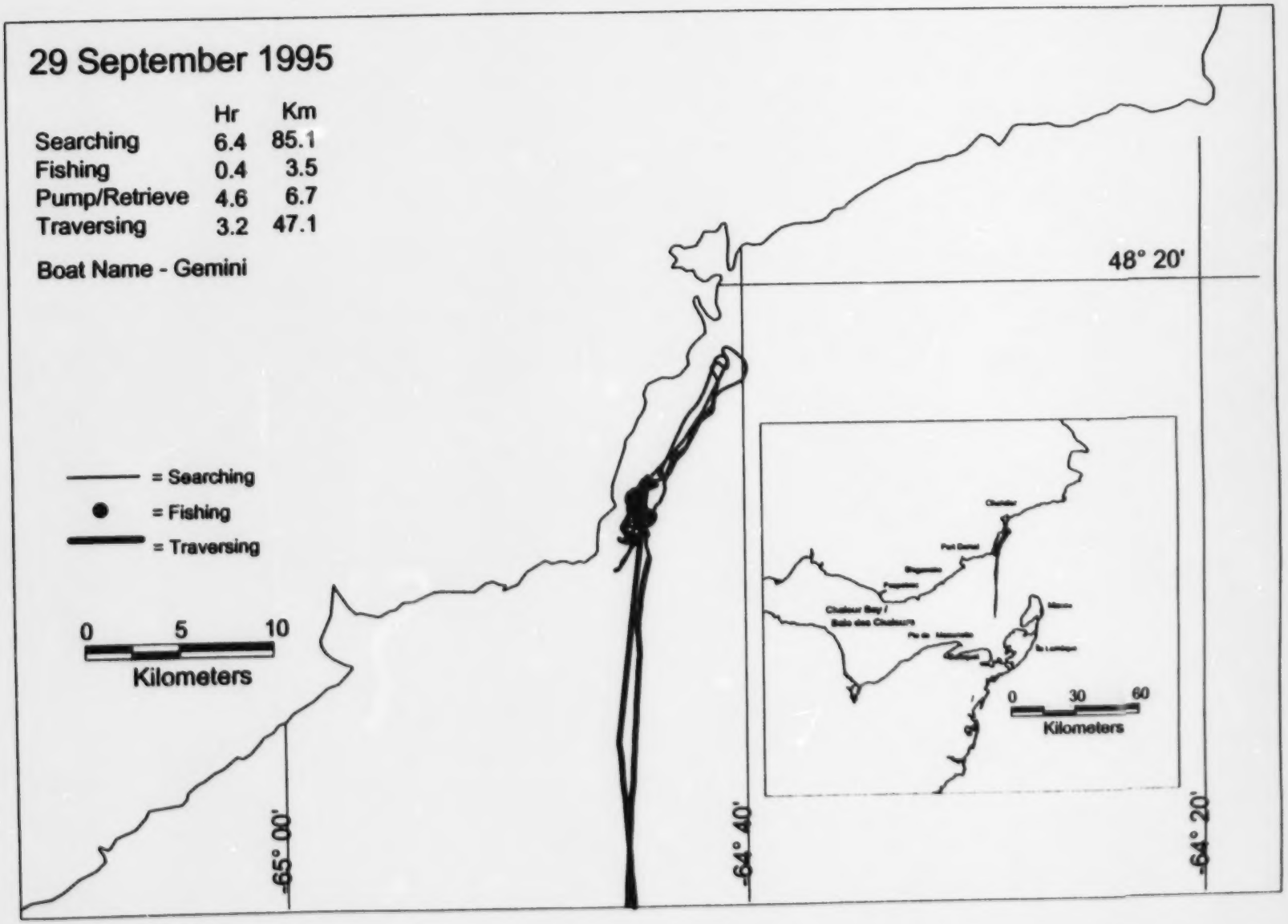

21 September 1995
Hr Km
Searching 5.3 72.2
Fishing 0.2 1.2
Pump/Retrieve 2.0 3.7
Traversing 6.0 113.8
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
-64° 15'
-64° 00'
48° 15'

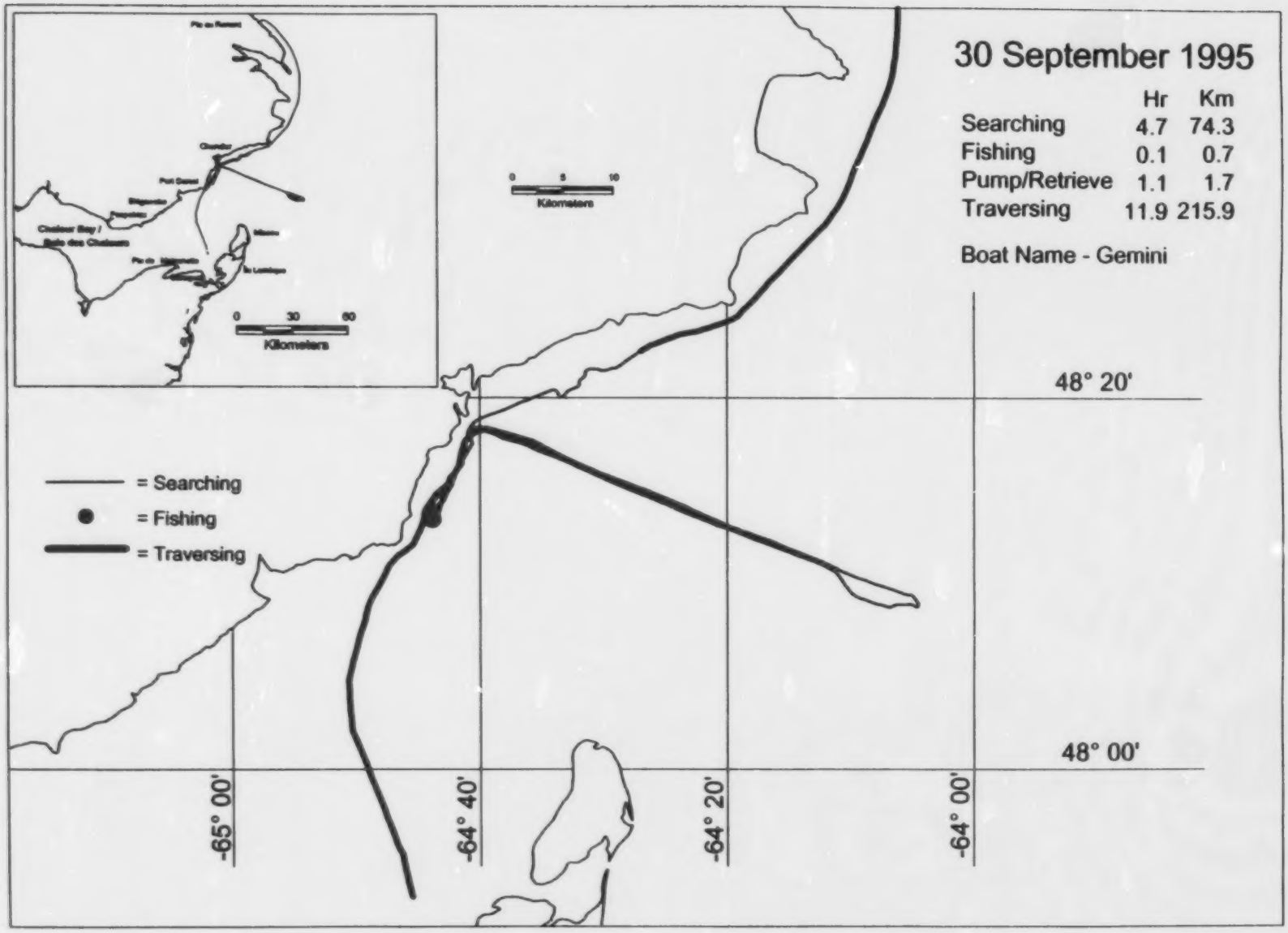

24 September 1995
Hr Km
Searching 4.0 62.8
Fishing 0.3 2.1
Pump/Retrieve 3.5 5.2
Traversing 3.3 63.1
Boat Name - Gemini
0 5 10
Kilometers
0 30 60
Kilometers
= Searching
= Fishing
= Traversing
48° 15'
-65° 00'
-64° 30'
-64° 15'
-64° 00'

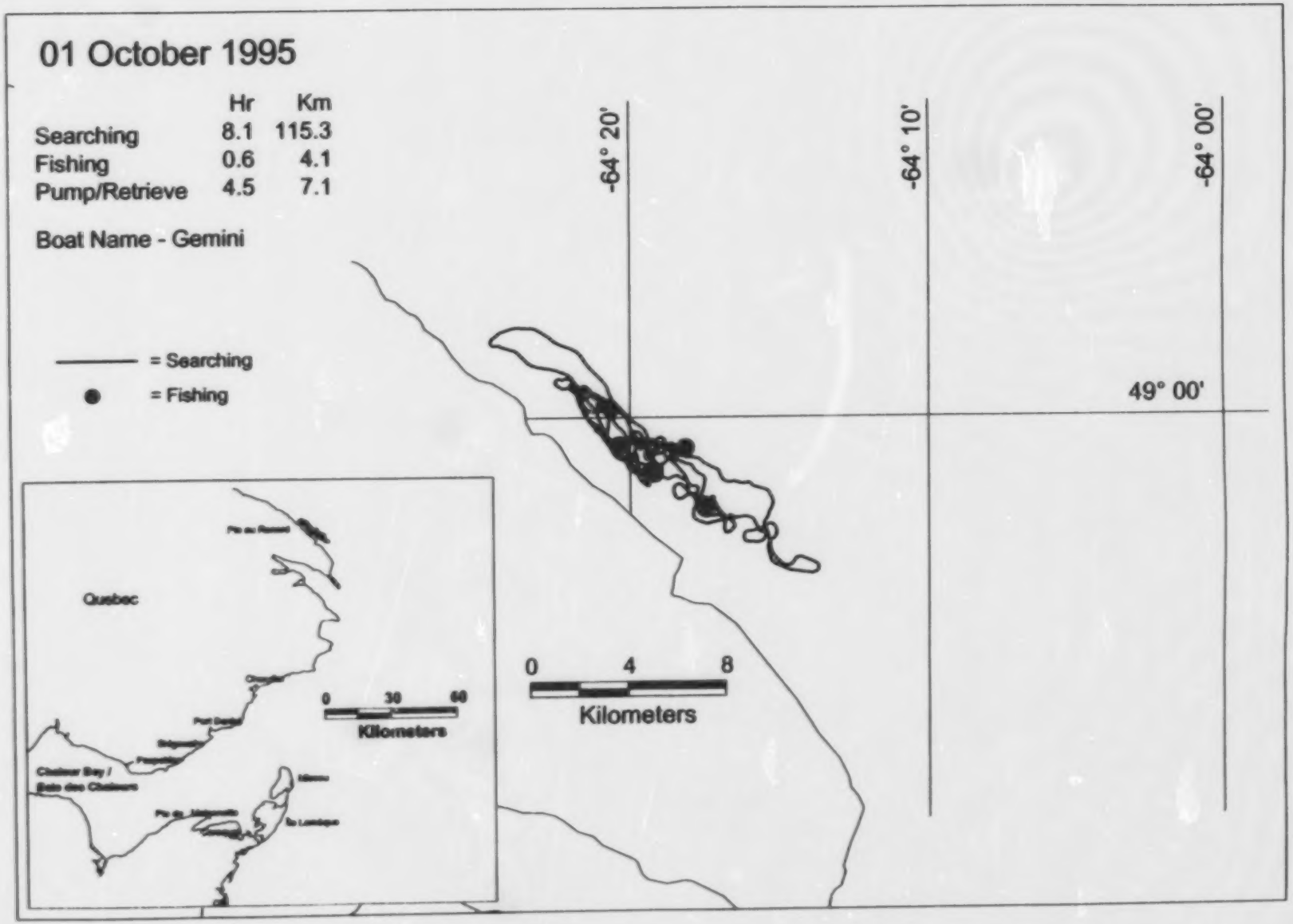

25 September 1995
Hr Km
Searching 3.5 28.0
Fishing 0.4 2.3
Pump/Retrieve 2.6 3.8
Traversing 4.5 91.6
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 4.5 9
Kilometers
48° 20'
-65° 00'
-64° 40'
-64° 20'
0 30 60
Kilometers

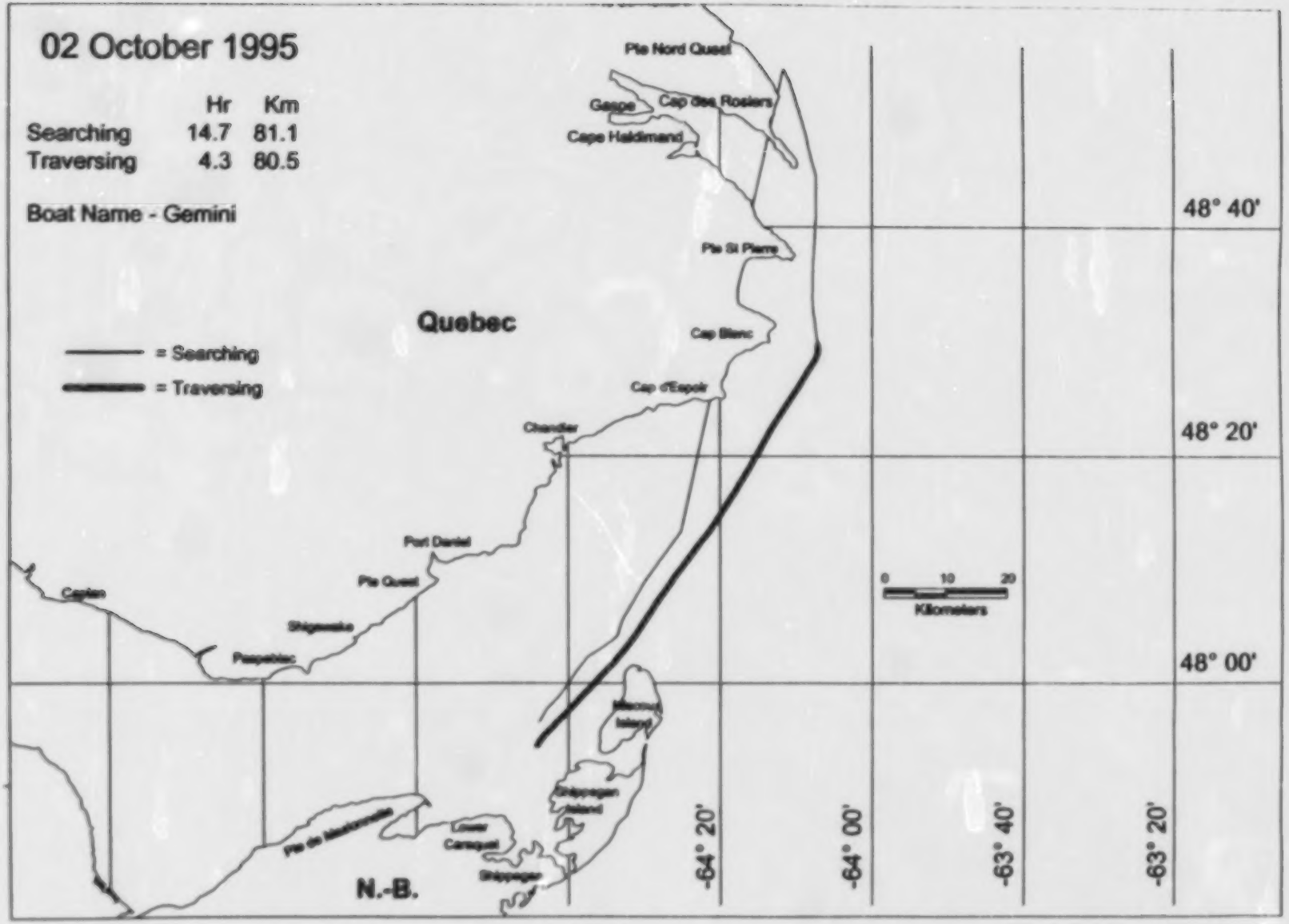

26 September 1995
Hr Km
Searching 3.2 41.2
Fishing 0.5 3.4
Pump/Retrieve 5.0 7.0
Traversing 3.9 75.2
Boat Name - Gemini
0 4.5 9
Kilometers
0 30 60
Kilometers
= Searching
= Fishing
= Traversing
48° 20'
48° 10'
-65° 00'
-64° 50'
-64° 40'
-64° 30'
-64° 20'

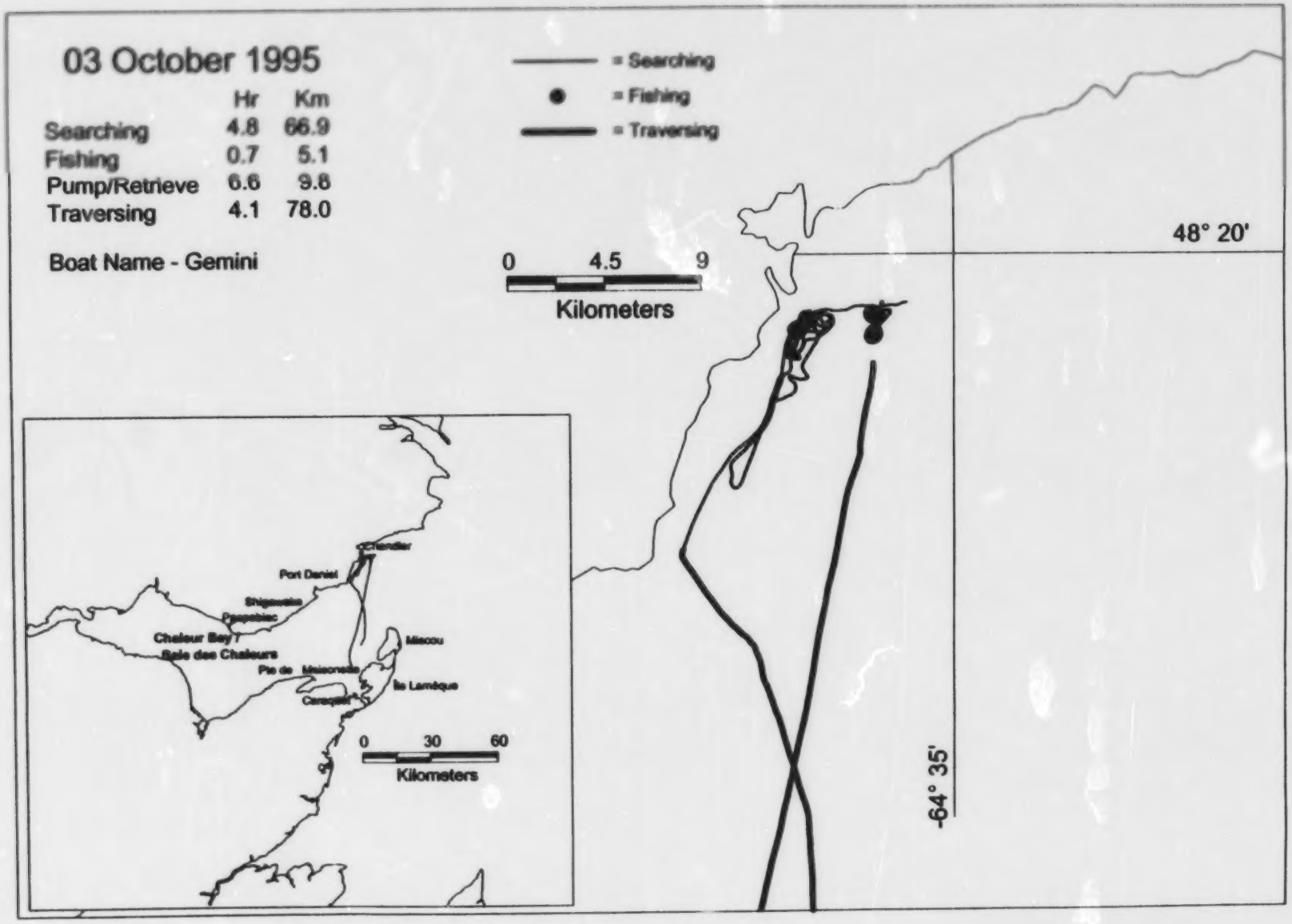

27 September 1995
Hr Km
Searching 7.4 124.7
Fishing 0.4 3.5
Pump/Retrieve 4.4 6.4
Traversing 3.9 65.5
Boat Name - Gemini
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
48° 00'
-65° 00'
-64° 40'
-64° 20'
-64° 00'
Port Daniel
Chaleur Bay / Baie des Chaleurs
Miscou
Ile Lamèque
0 30 60
Kilometers

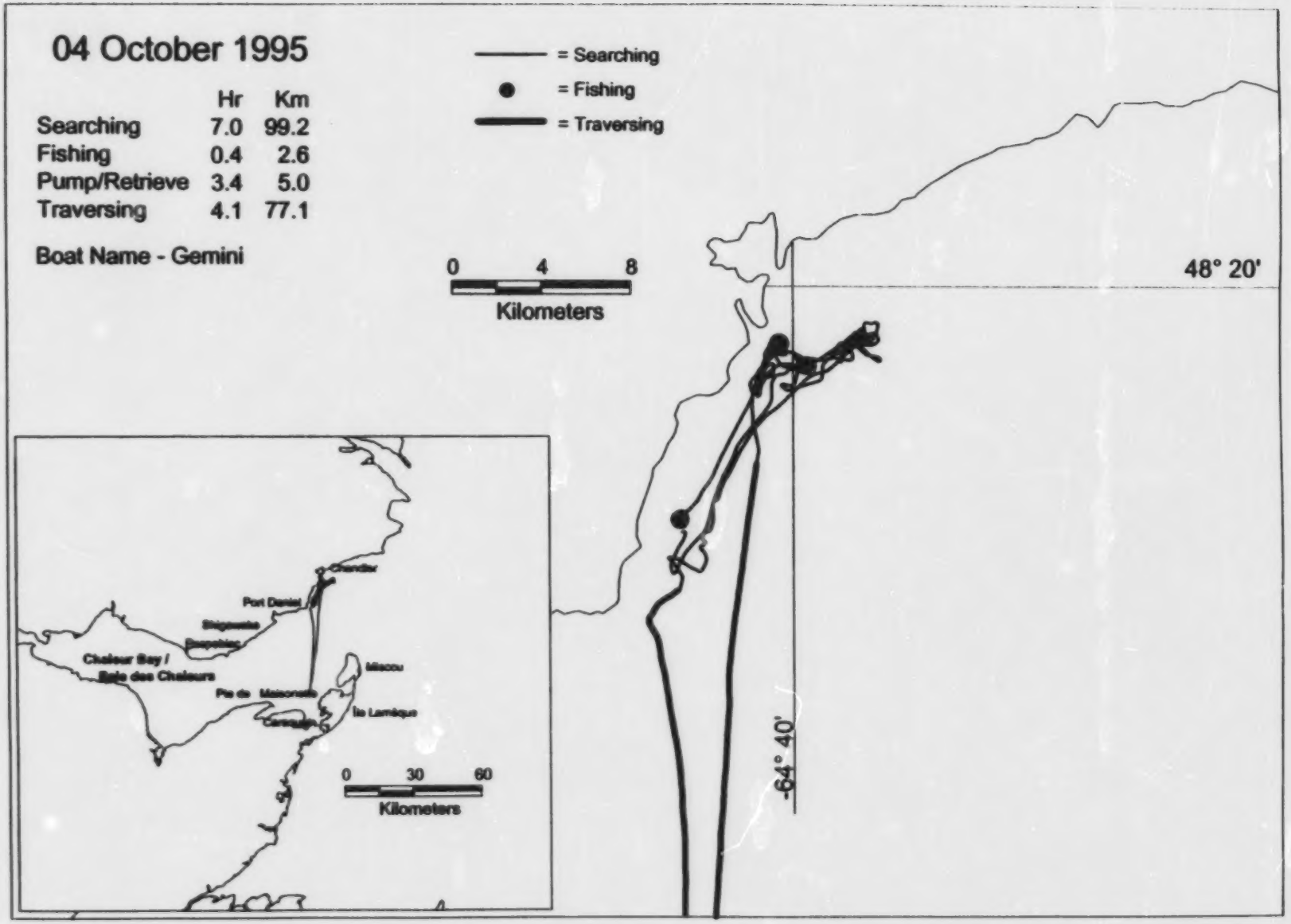

29 September 1995
Hr Km
Searching 6.4 85.1
Fishing 0.4 3.5
Pump/Retrieve 4.6 6.7
Traversing 3.2 47.1
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
48° 20'
65° 00'
64° 40'
64° 20'
0 30 60
Kilometers

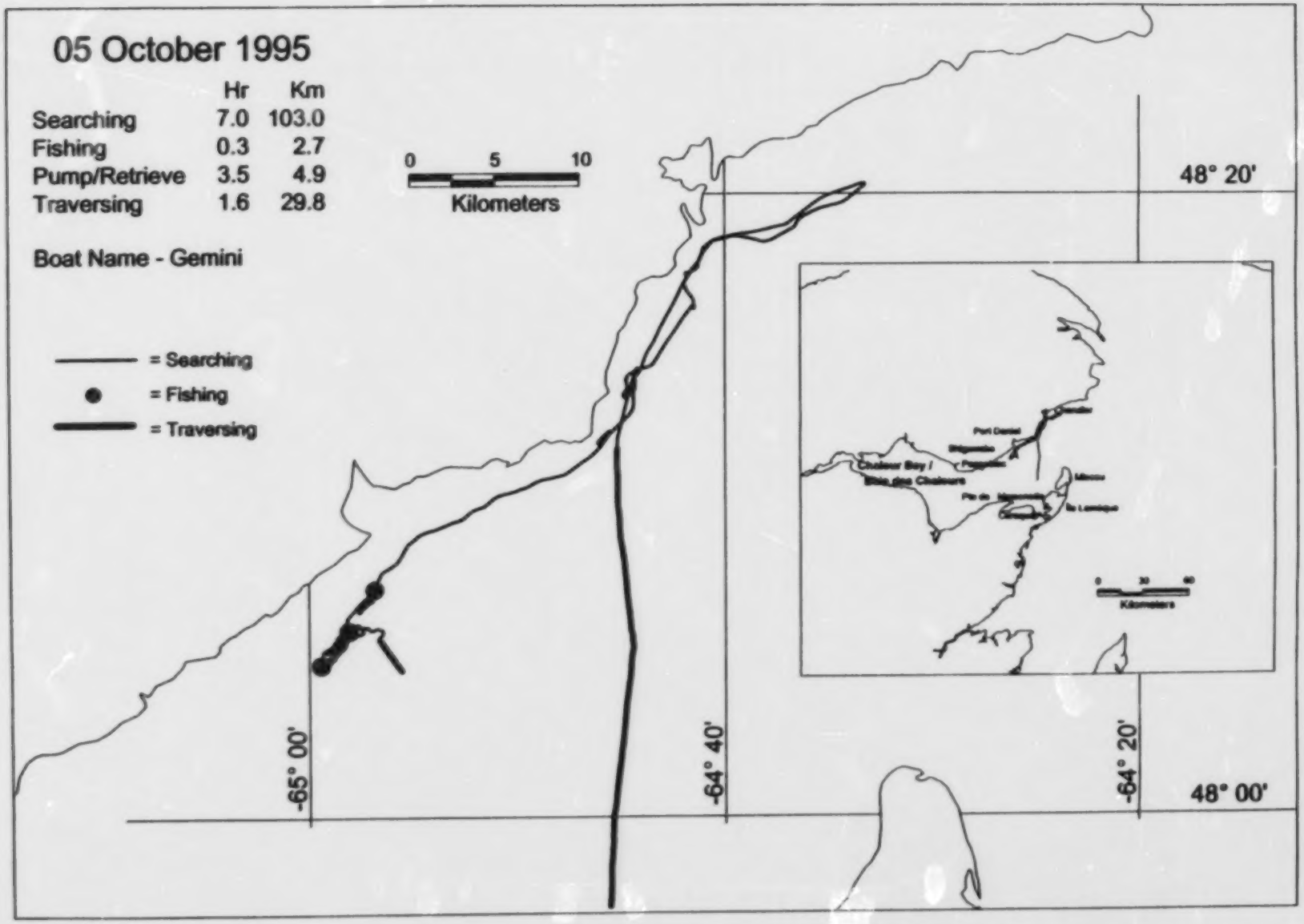

30 September 1995
Hr Km
Searching 4.7 74.3
Fishing 0.1 0.7
Pump/Retrieve 1.1 1.7
Traversing 11.9 215.9
Boat Name - Gemini
= Searching
= Fishing
= Traversing
48° 20'
48° 00'
-65° 00'
-64° 40'
-64° 20'
-64° 00'
Kilometers
Kilometers

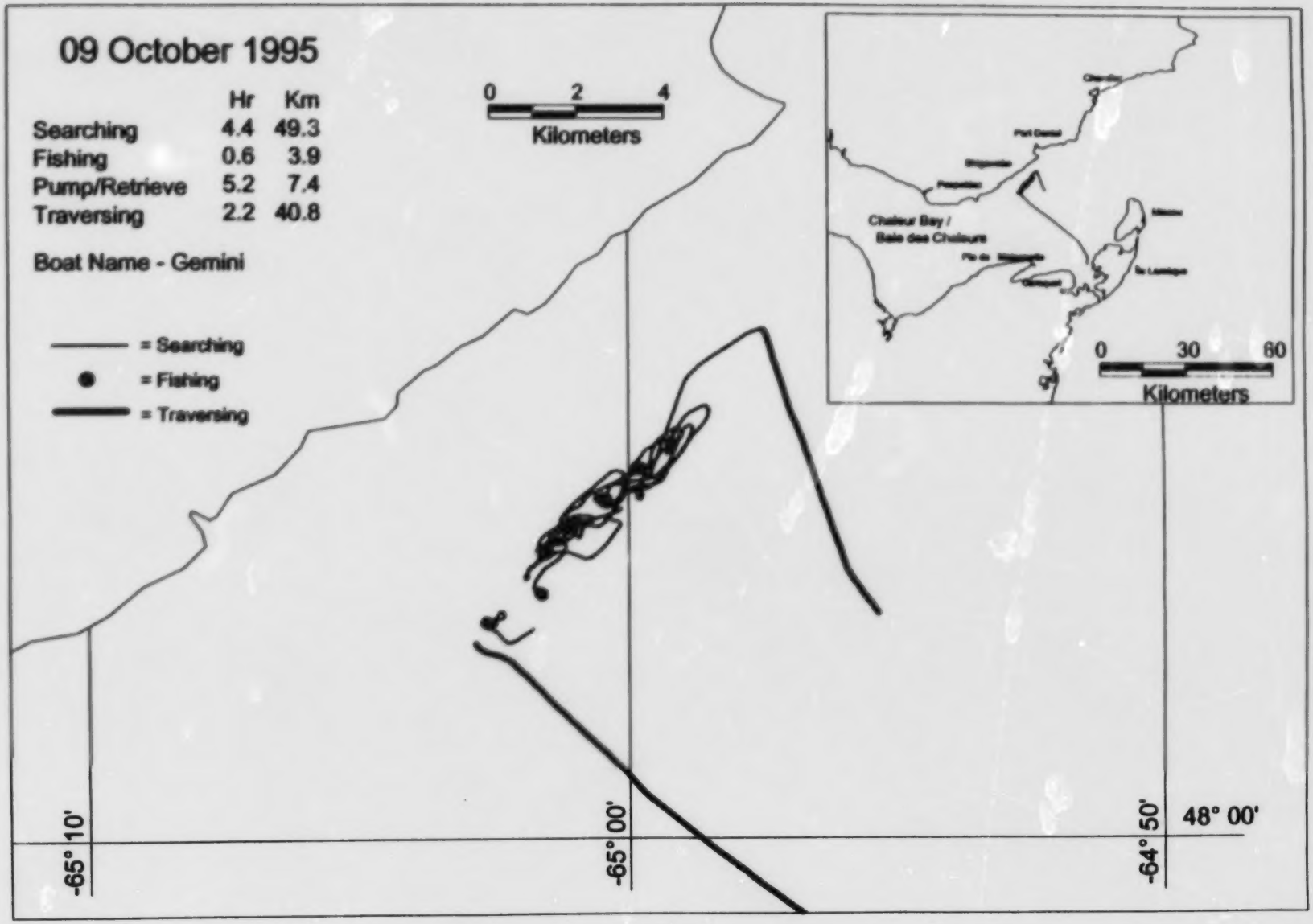

01 October 1995
Hr Km
Searching 8.1 115.3
Fishing 0.6 4.1
Pump/Retrieve 4.5 7.1
Boat Name - Gemini
= Searching
= Fishing
-64° 20'
-64° 10'
-64° 00'
49° 00'
0 4 8
Kilometers
Quebec
0 30 60
Kilometers

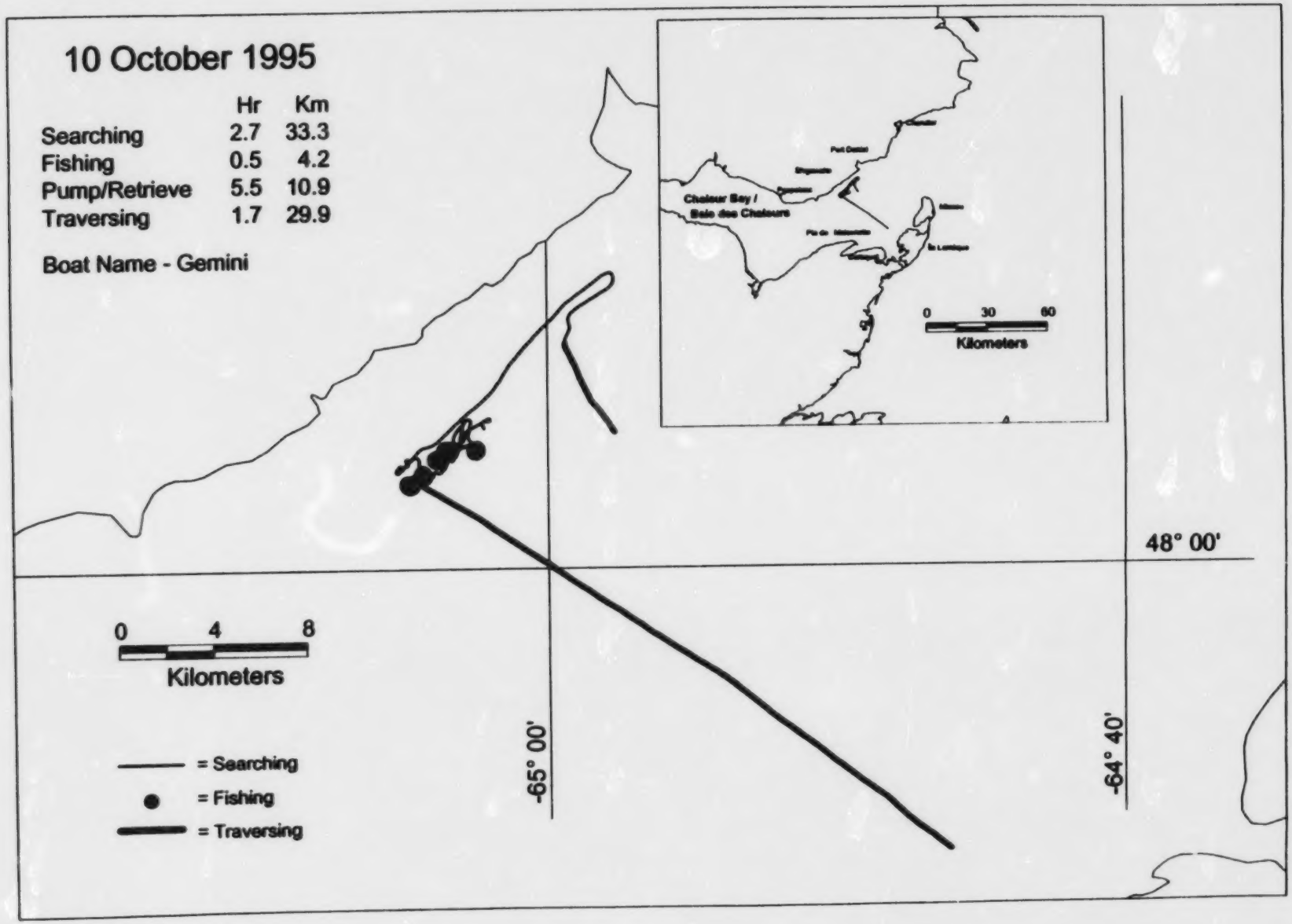

02 October 1995
Hr Km
Searching 14.7 81.1
Traversing 4.3 80.5
Boat Name - Gemini
= Searching
= Traversing
Pte Nord Ouest
Gaspe
Cap des Rosiers
Cape Haldimand
Pte St Pierre
Quebec
Cap Blanc
Cap d'Espoir
Chandler
Port Daniel
Pte Ouest
Caplan
Shigawake
Paspebiac
0 10 20
Kilometers
48° 40'
48° 20'
48° 00'
-64° 20'
-64° 00'
-63° 40'
-63° 20'
N.-B.

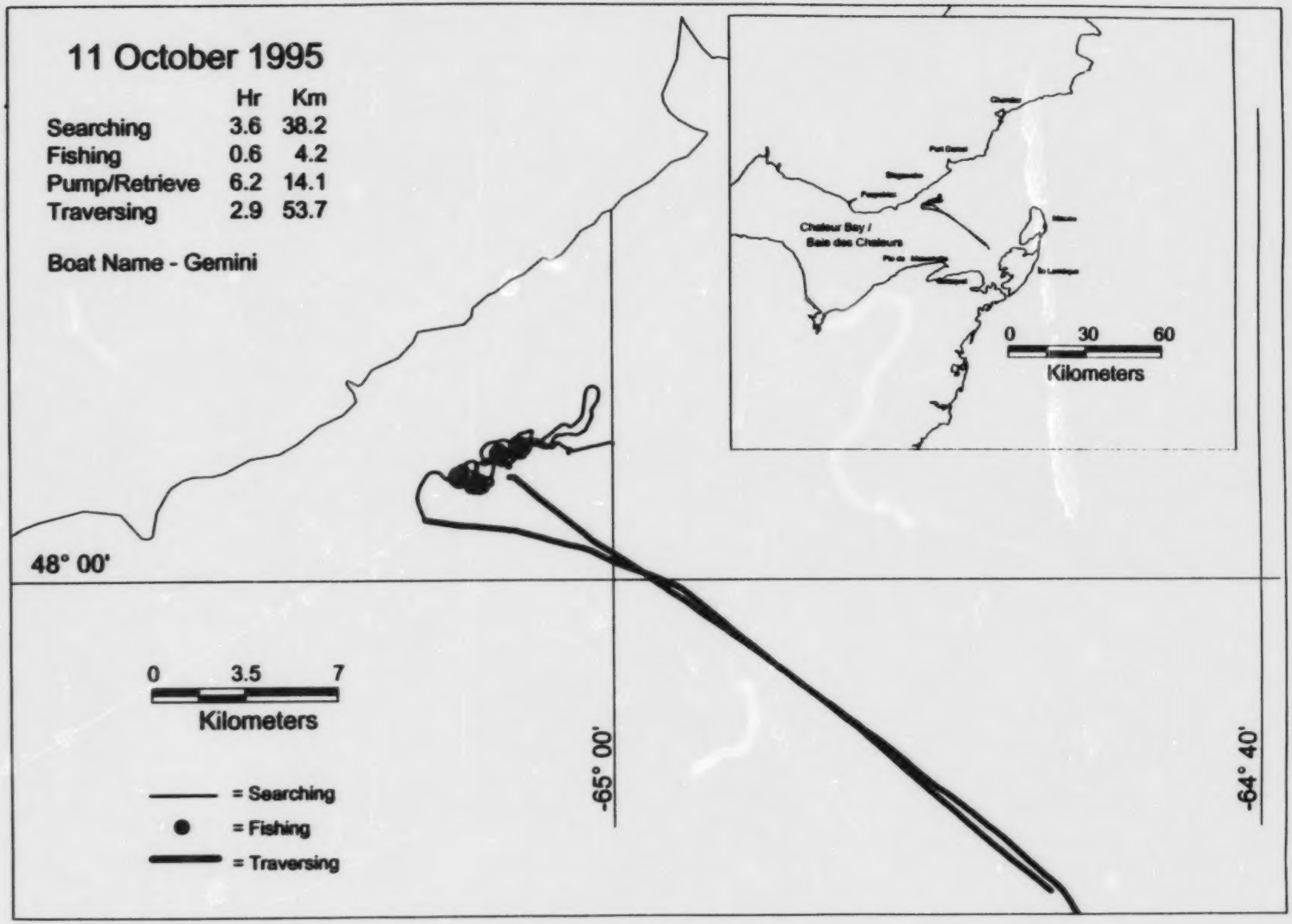

03 October 1995
Hr Km
Searching 4.8 66.9
Fishing 0.7 5.1
Pump/Retrieve 6.6 9.8
Traversing 4.1 78.0
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 4.5 9
Kilometers
48° 20'
-64° 35'
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonnette
Miscou
Ile Lamèque
Caraquet
0 30 60
Kilometers

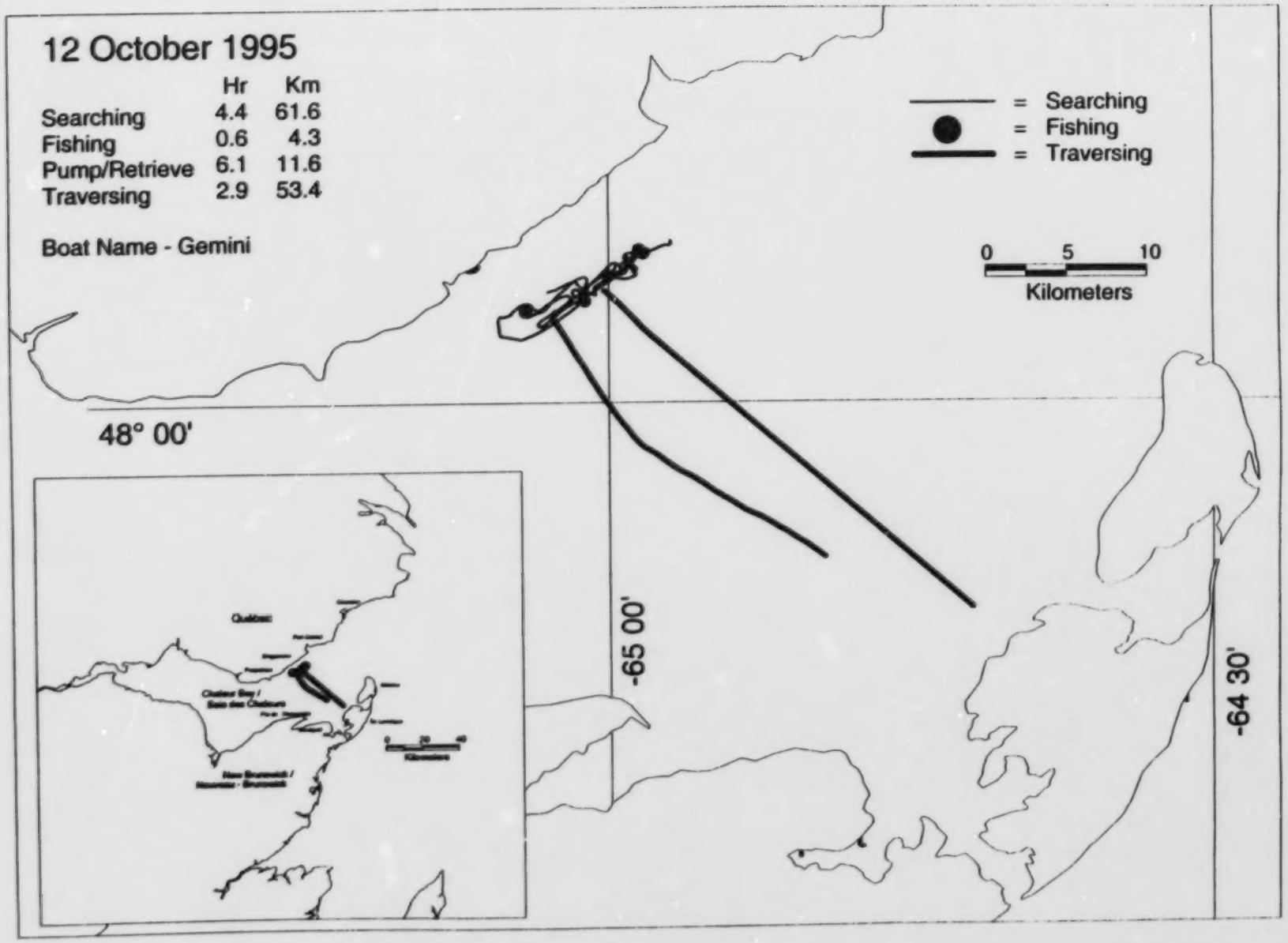

04 October 1995
Hr Km
Searching 7.0 99.2
Fishing 0.4 2.6
Pump/Retrieve 3.4 5.0
Traversing 4.1 77.1
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 4 8
Kilometers
48° 20'
-64° 40'
Port Daniel
Chaleur Bay /
Baie des Chaleurs
Miscou
Pte de Maisonnette
Ile Lamèque
0 30 60
Kilometers

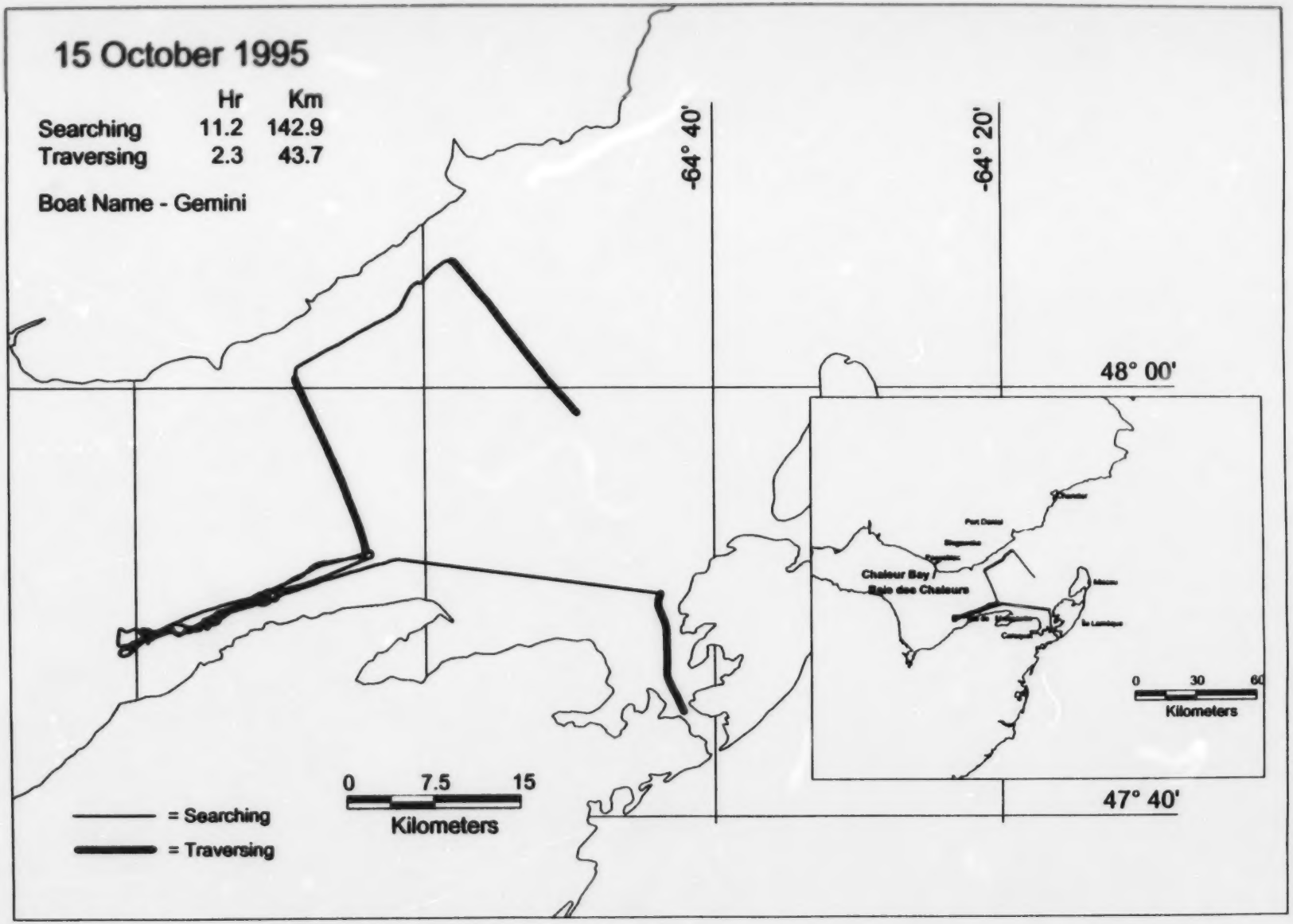

05 October 1995
Hr Km
Searching 7.0 103.0
Fishing 0.3 2.7
Pump/Retrieve 3.5 4.9
Traversing 1.6 29.8
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
48° 20'
48° 00'
-65° 00'
-64° 40'
-64° 20'

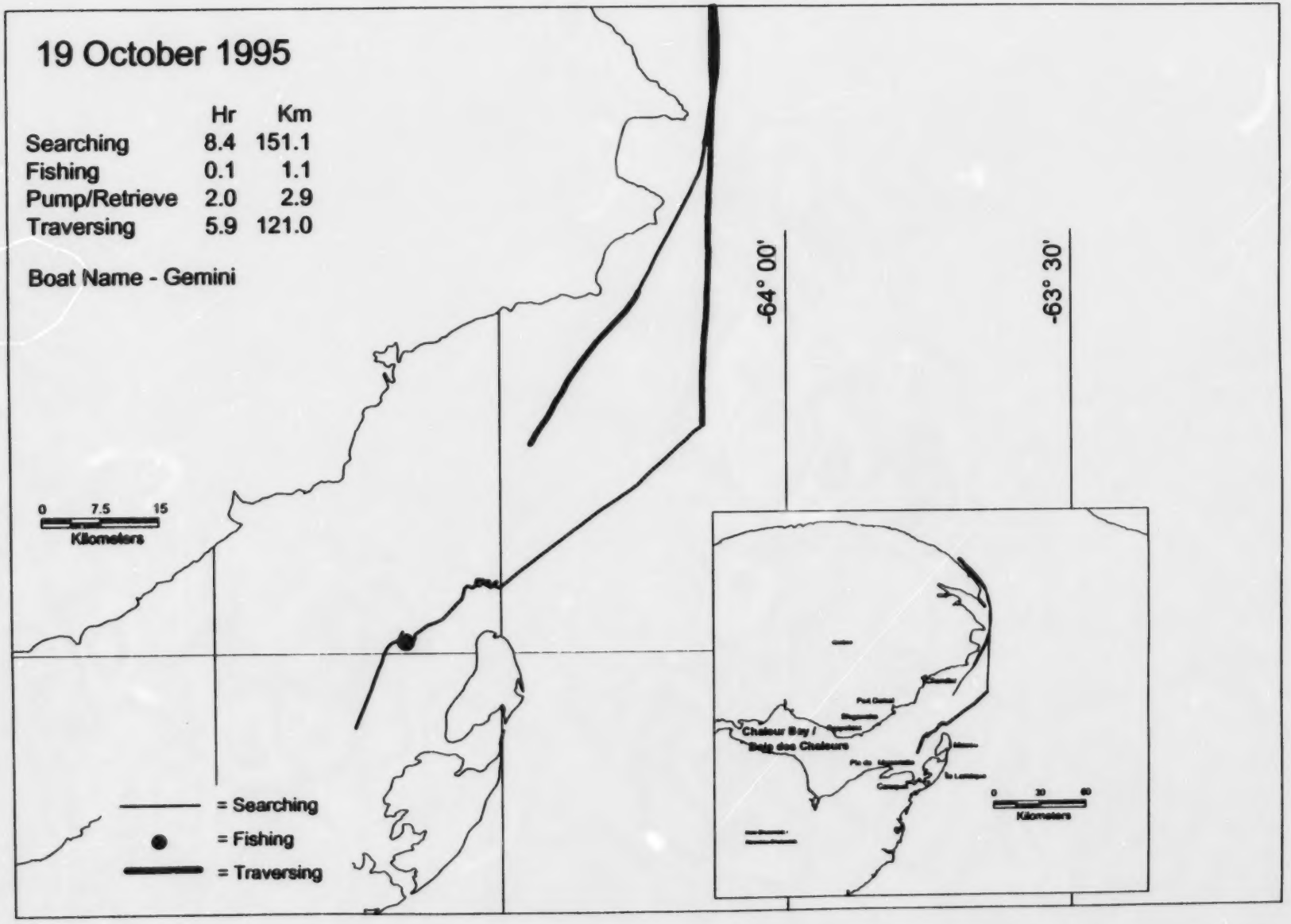

09 October 1995
Hr Km
Searching 4.4 49.3
Fishing 0.6 3.9
Pump/Retrieve 5.2 7.4
Traversing 2.2 40.8
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 2 4
Kilometers
Chaleur Bay /
Baie des Chaleurs
0 30 60
Kilometers
-65° 10'
-65° 00'
-64° 50'
48° 00'

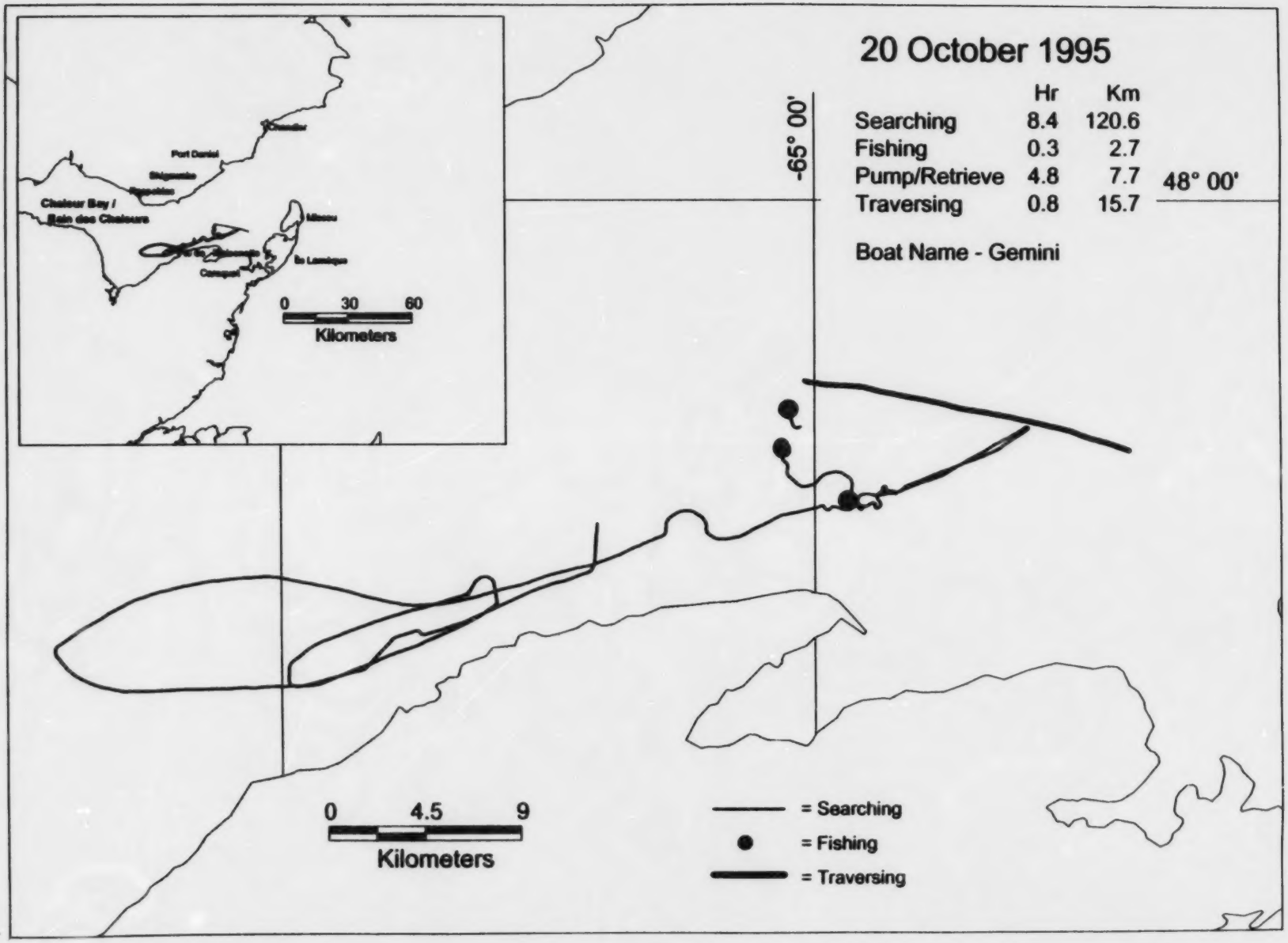

10 October 1995
Hr Km
Searching 2.7 33.3
Fishing 0.5 4.2
Pump/Retrieve 5.5 10.9
Traversing 1.7 29.9
Boat Name - Gemini
Chaleur Bay / Baie des Chaleurs
0 30 60
Kilometers
48° 00'
0 4 8
Kilometers
-65° 00'
-64° 40'
= Searching
= Fishing
= Traversing

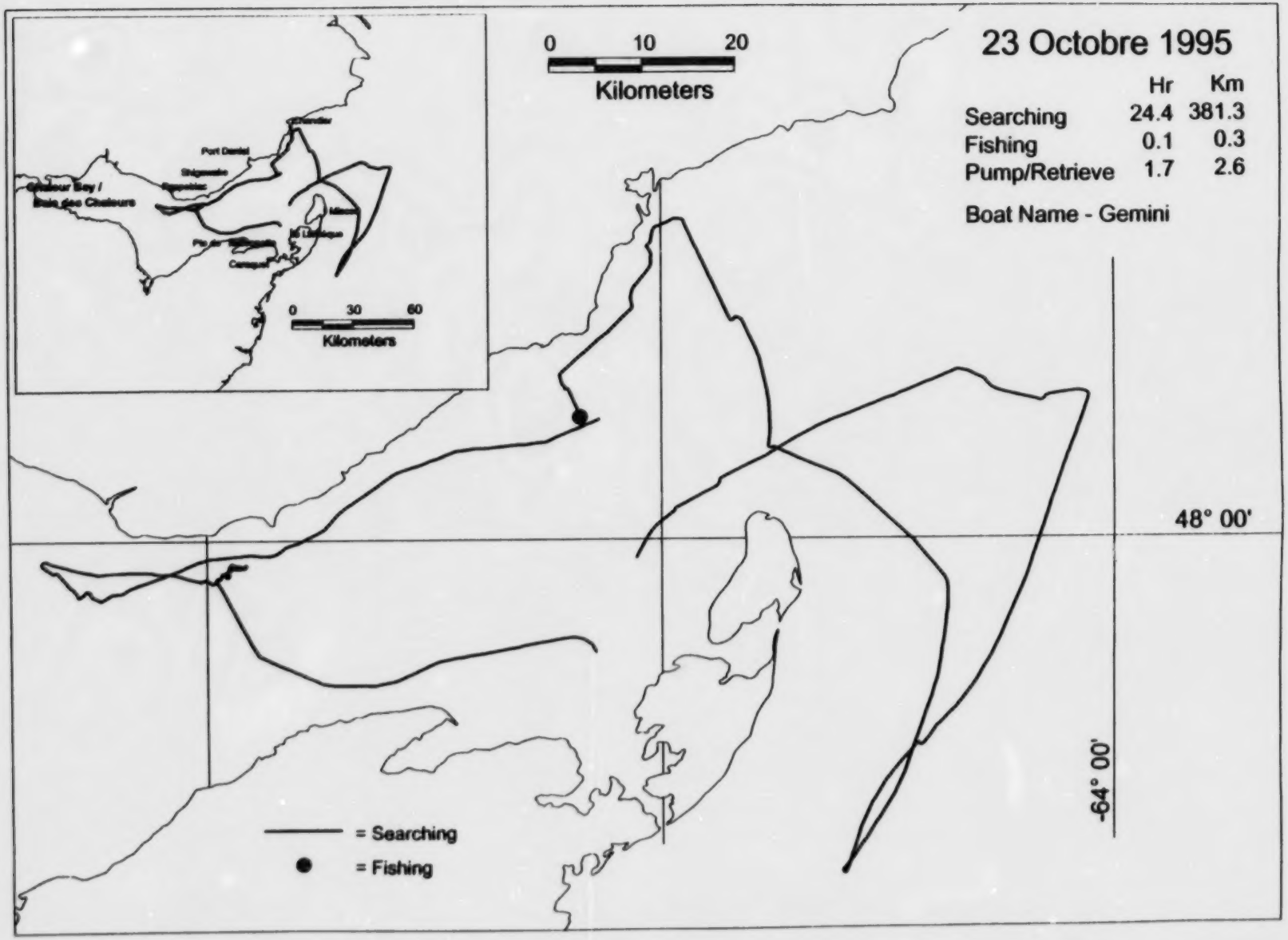

11 October 1995
Hr Km
Searching 3.6 38.2
Fishing 0.6 4.2
Pump/Retrieve 6.2 14.1
Traversing 2.9 53.7
Boat Name - Gemini
Chaleur Bay /
Baie des Chaleurs
0 30 60
Kilometers
48° 00'
0 3.5 7
Kilometers
= Searching
= Fishing
= Traversing
-65° 00'
-64° 40'

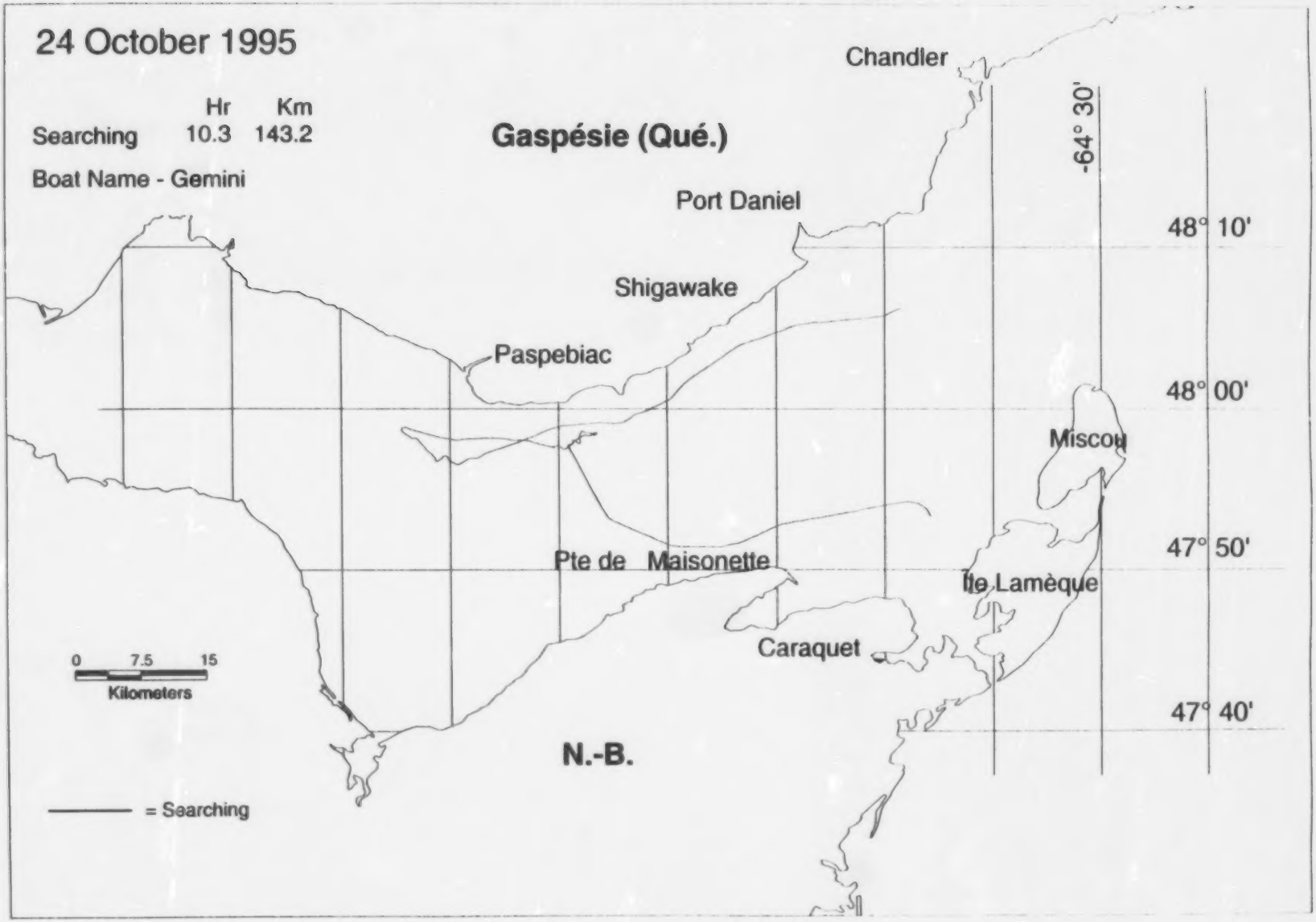

12 October 1995
Hr Km
Searching 4.4 61.6
Fishing 0.6 4.3
Pump/Retrieve 6.1 11.6
Traversing 2.9 53.4
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
48° 00'
-65 00'
-64 30'

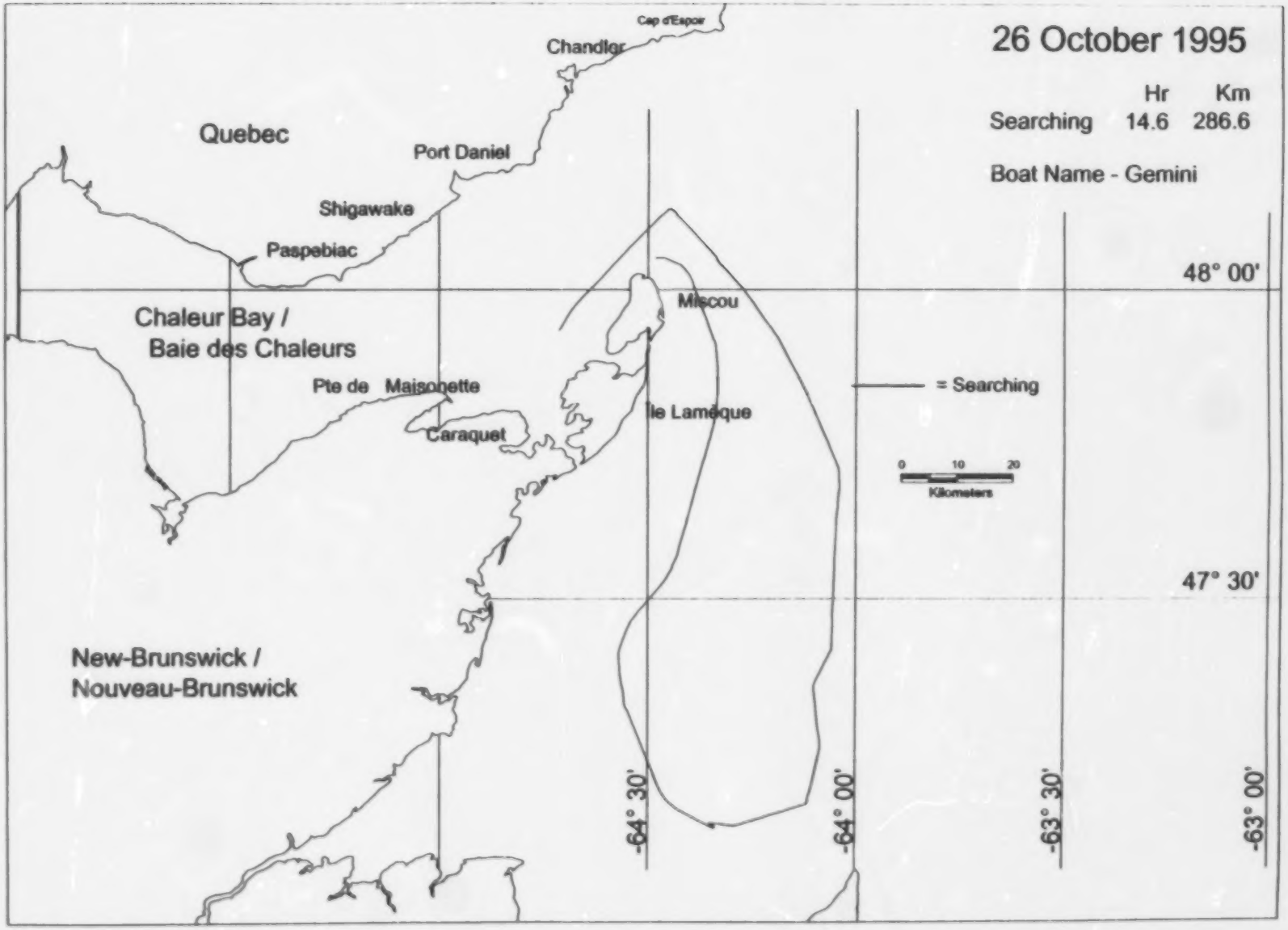

15 October 1995
Hr Km
Searching 11.2 142.9
Traversing 2.3 43.7
Boat Name - Gemini
-64° 40'
-64° 20'
48° 00'
47° 40'
Chaleur Bay
Baie des Chaleurs
0 30 60
Kilometers
0 7.5 15
Kilometers
= Searching
= Traversing

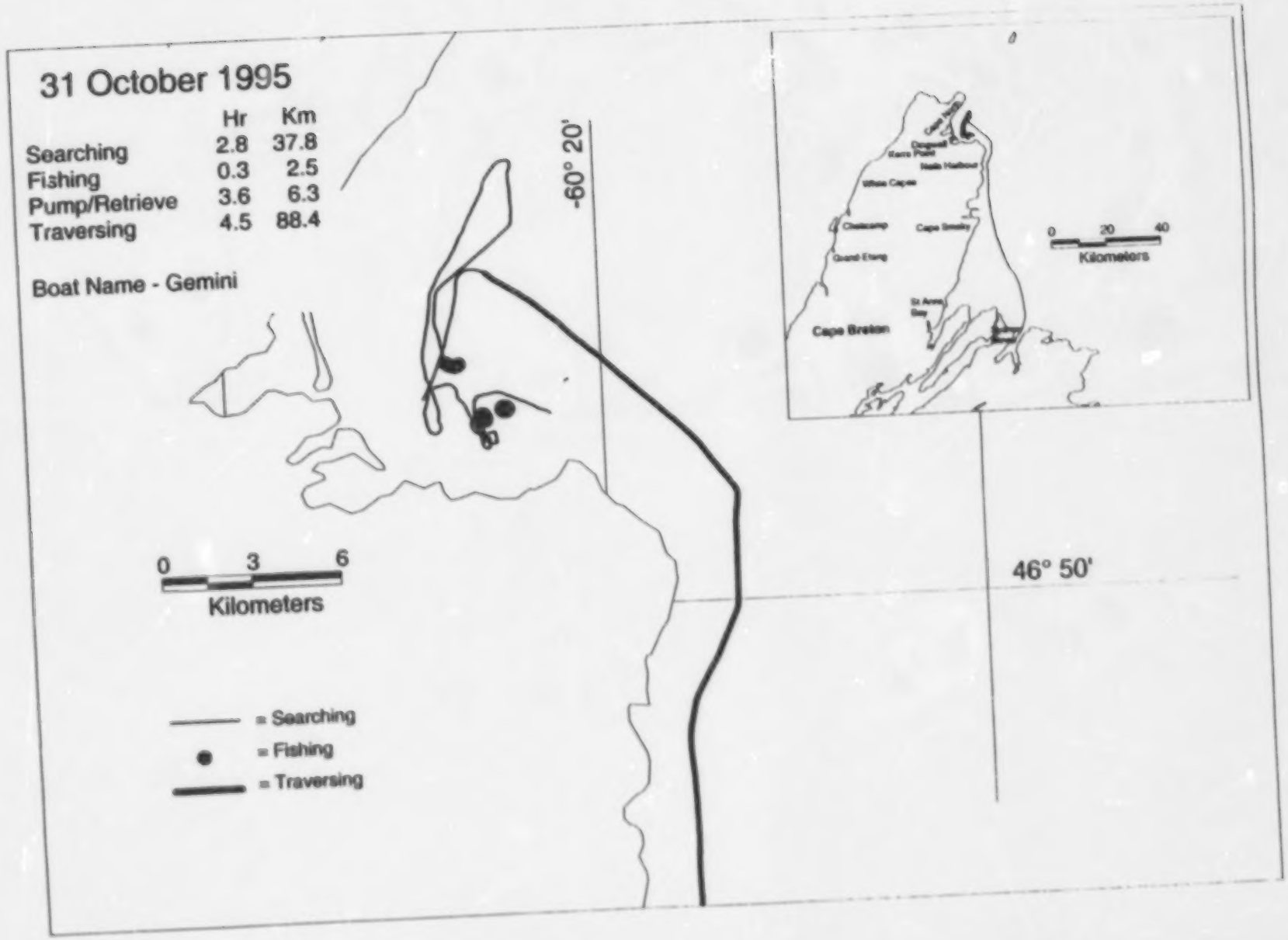

19 October 1995
Hr Km
Searching 8.4 151.1
Fishing 0.1 1.1
Pump/Retrieve 2.0 2.9
Traversing 5.9 121.0
Boat Name - Gemini
-64° 00'
-63° 30'
0 7.5 15
Kilometers
= Searching
= Fishing
= Traversing
Chaleur Bay /
Baie des Chaleurs
0 30 60
Kilometers

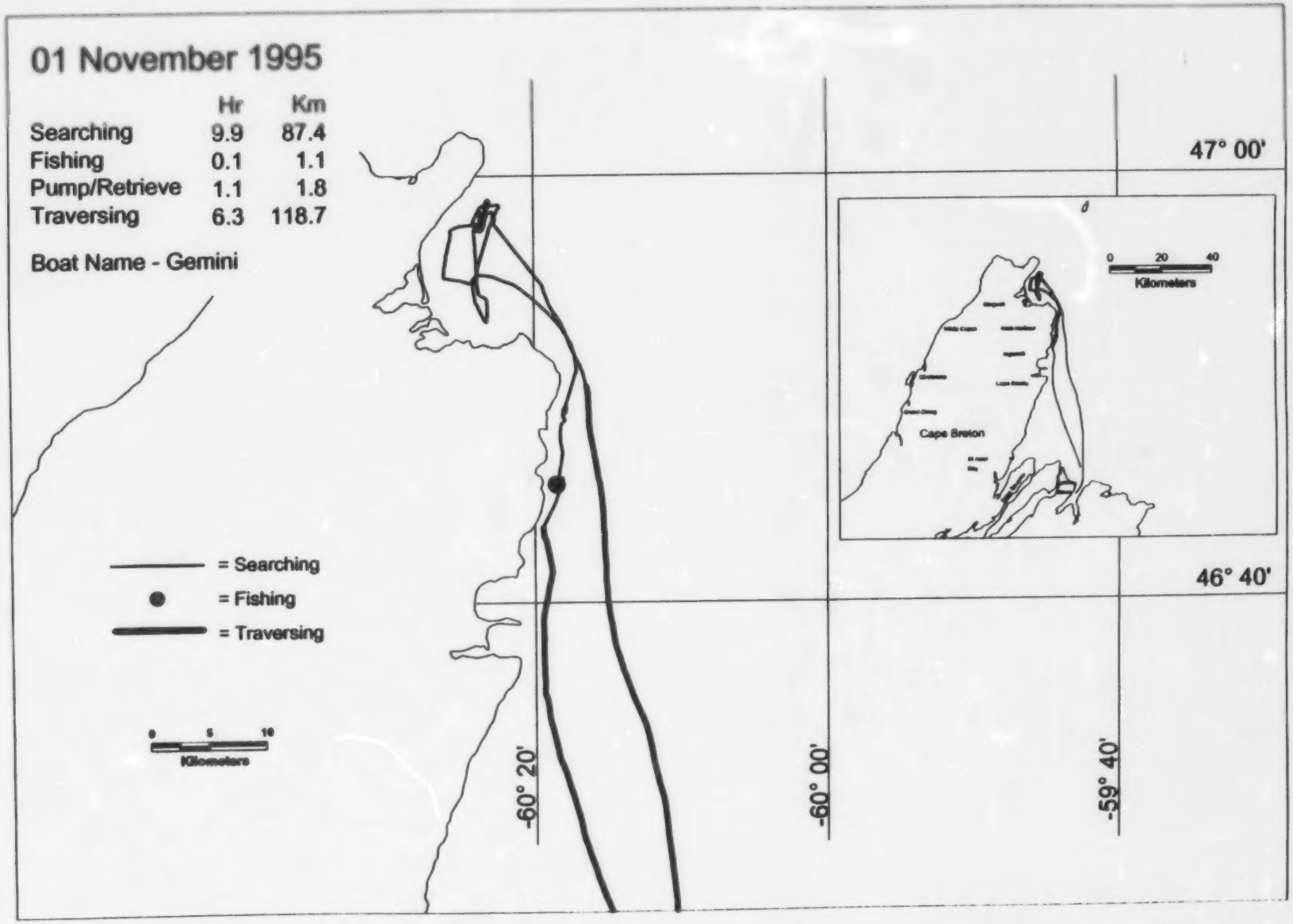

20 October 1995
Hr Km
Searching 8.4 120.6
Fishing 0.3 2.7
Pump/Retrieve 4.8 7.7
Traversing 0.8 15.7
Boat Name - Gemini
-65° 00'
48° 00'
0 4.5 9
Kilometers
= Searching
= Fishing
= Traversing
Chandler
Port Daniel
Chaleur Bay /
Baie des Chaleurs
Miscou
Caraquet
Ile Lamèque
0 30 60
Kilometers

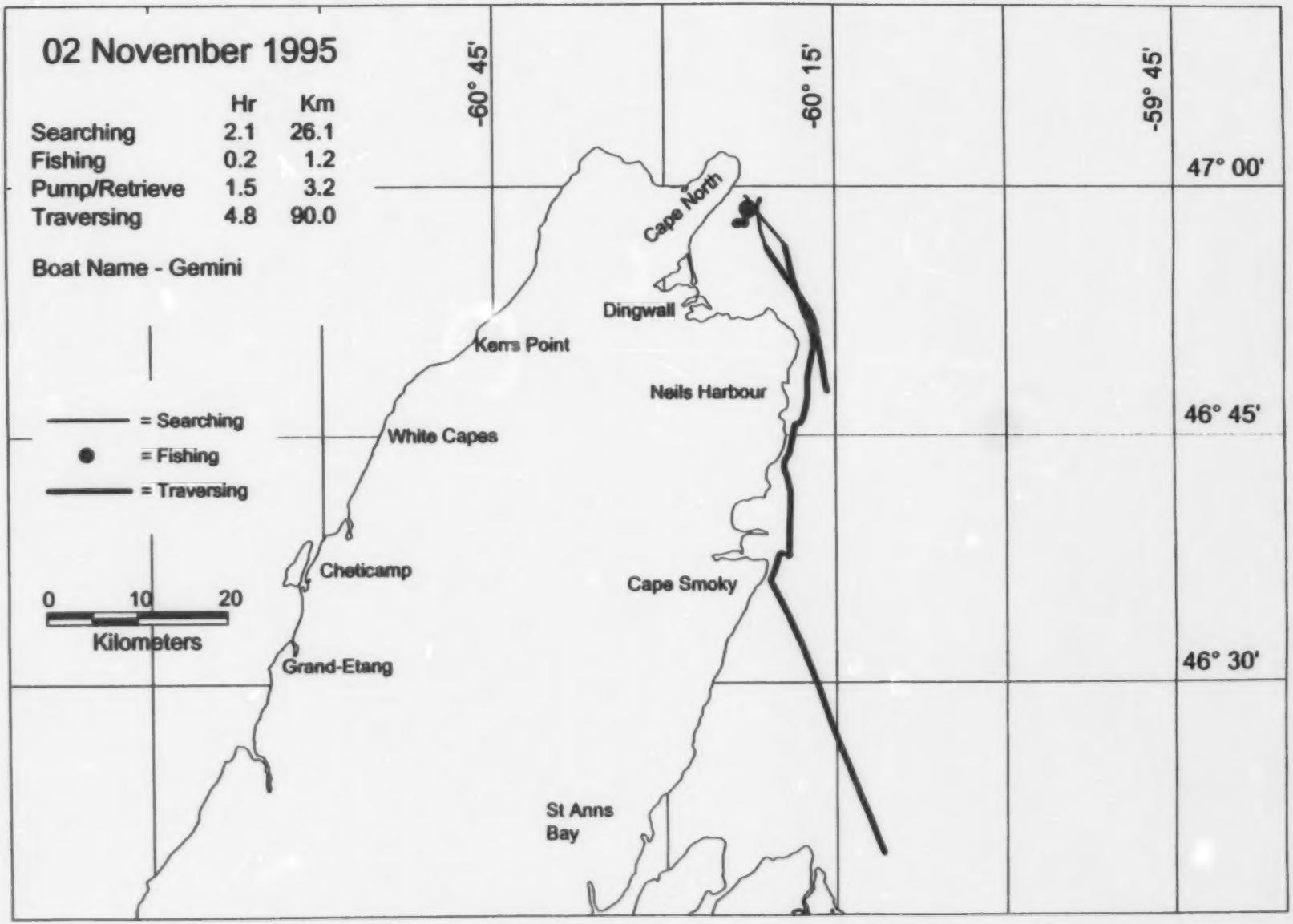

0 10 20
Kilometers
23 Octobre 1995
Hr Km
Searching 24.4 381.3
Fishing 0.1 0.3
Pump/Retrieve 1.7 2.6
Boat Name - Gemini
48° 00'
-64° 00'
= Searching
= Fishing
0 30 60
Kilometers

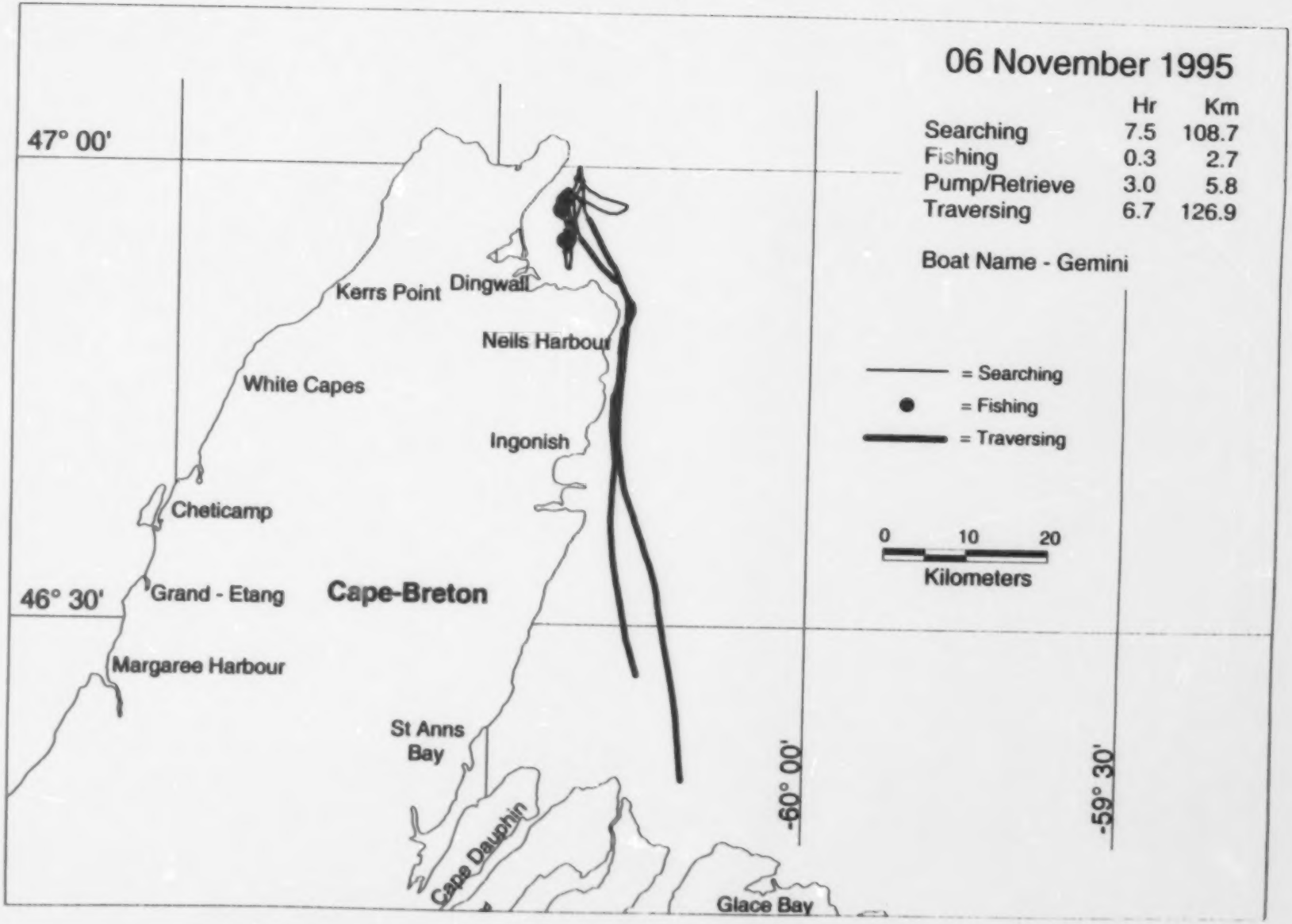

24 October 1995
Hr Km
Searching 10.3 143.2
Boat Name - Gemini
Gaspésie (Qué.)
Chandler
-64° 30'
Port Daniel
48° 10'
Shigawake
Paspebiac
48° 00'
Miscou
Pte de Maisonette
47° 50'
Ile Lamèque
Caraquet
47° 40'
0 7.5 15
Kilometers
N.-B.
= Searching

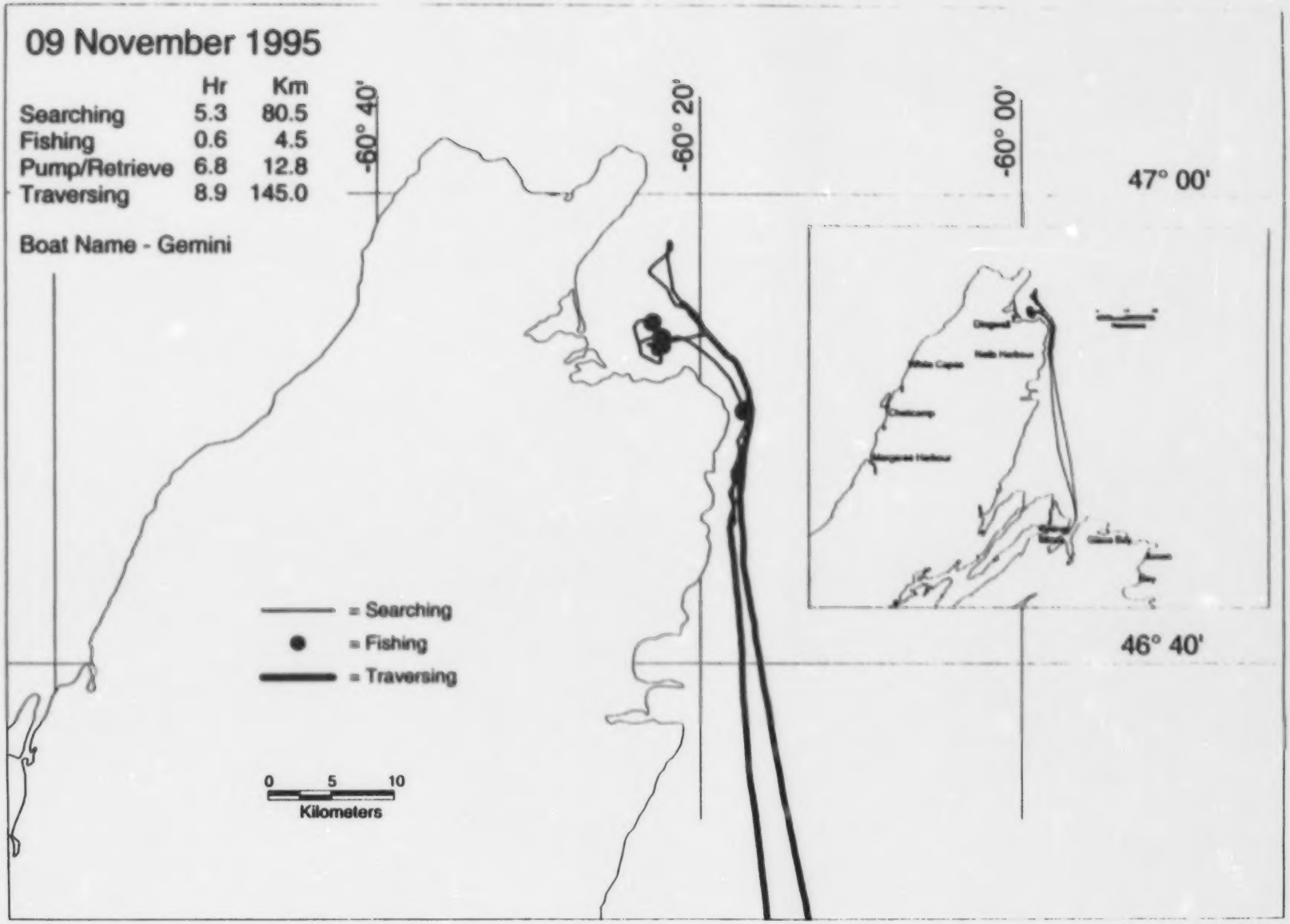

26 October 1995
Hr Km
Searching 14.6 286.6
Boat Name - Gemini
Cap d'Espoir
Chandler
Quebec
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonette
Caraquet
Miscou
Ile Lamèque
= Searching
0 10 20
Kilometers
48° 00'
47° 30'
New-Brunswick /
Nouveau-Brunswick
-64° 30'
-64° 00'
-63° 30'
-63° 00'

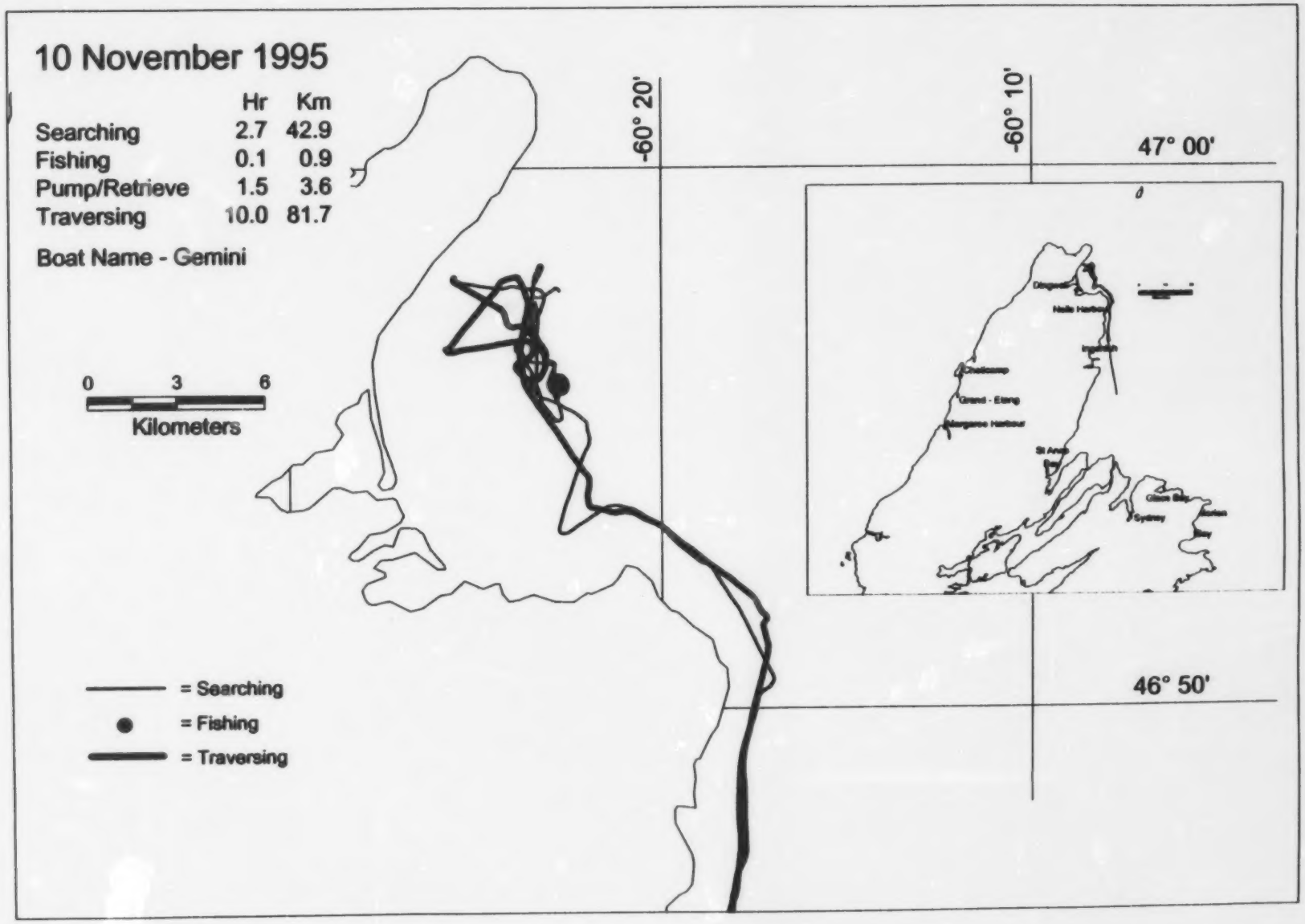

31 October 1995
Hr Km
Searching 2.8 37.8
Fishing 0.3 2.5
Pump/Retrieve 3.6 6.3
Traversing 4.5 88.4
Boat Name - Gemini
-60° 20'
46° 50'
0 3 6
Kilometers
= Searching
= Fishing
= Traversing
Cape Breton
0 20 40
Kilometers

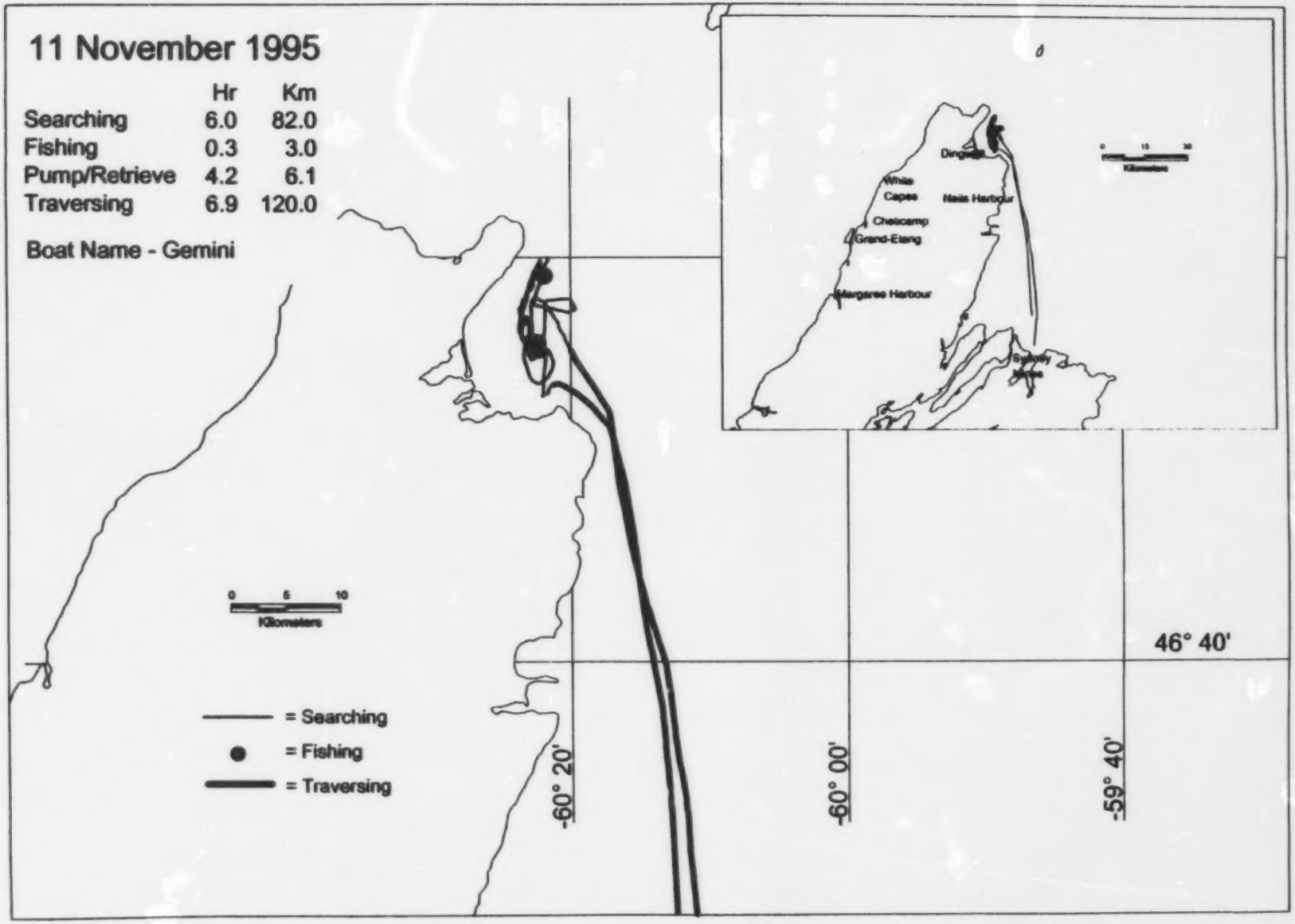

01 November 1995
Hr Km
Searching 9.9 87.4
Fishing 0.1 1.1
Pump/Retrieve 1.1 1.8
Traversing 6.3 118.7
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
47° 00'
46° 40'
-60° 20'
-60° 00'
-59° 40'
0 20 40
Kilometers
Cape Breton

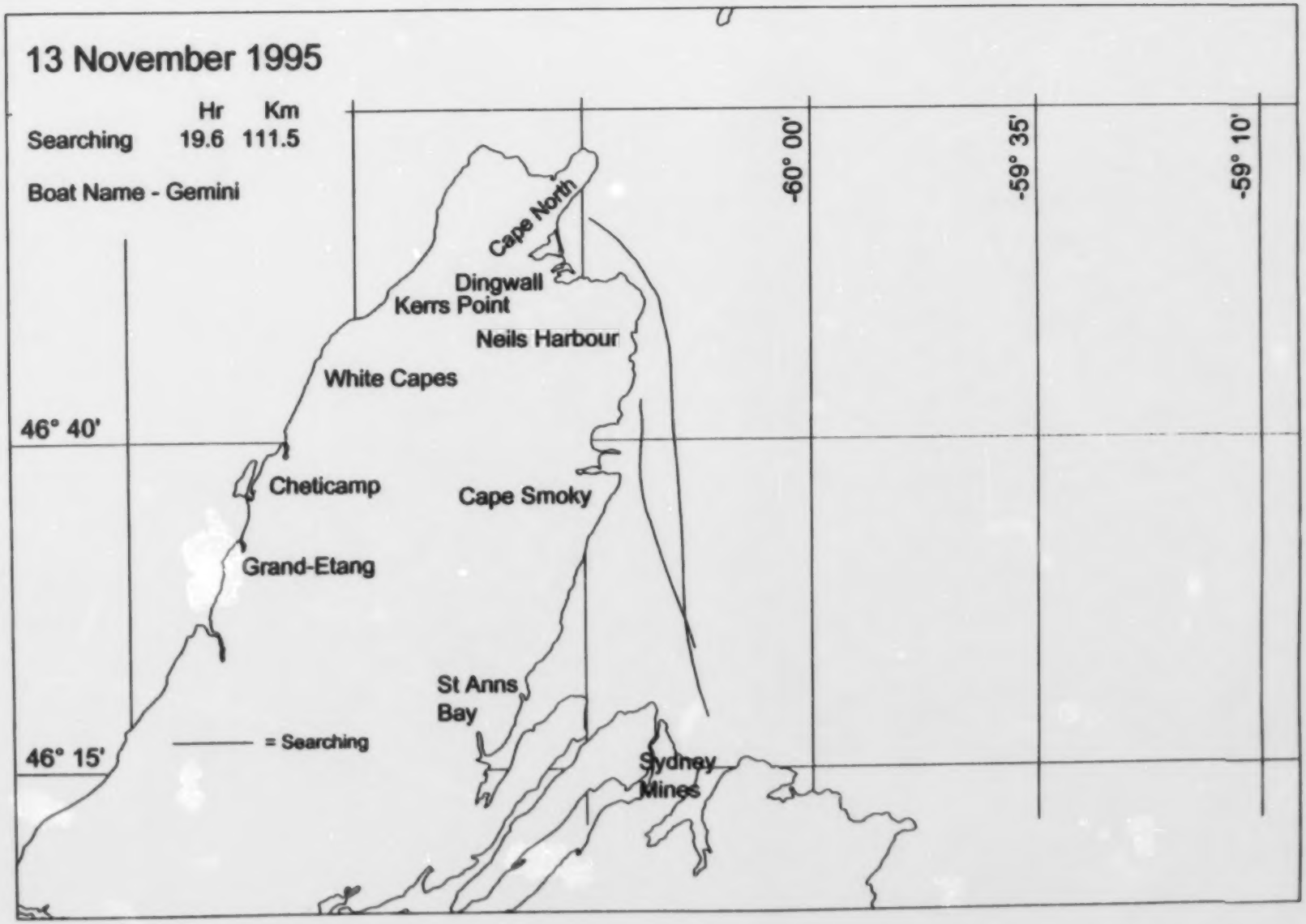

02 November 1995
Hr Km
Searching 2.1 26.1
Fishing 0.2 1.2
Pump/Retrieve 1.5 3.2
Traversing 4.8 90.0
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 10 20
Kilometers
-60° 45'
-60° 15'
-59° 45'
47° 00'
46° 45'
46° 30'
Cape North
Dingwall
Kerrs Point
Neils Harbour
White Capes
Cheticamp
Cape Smoky
Grand-Etang
St Anns
Bay

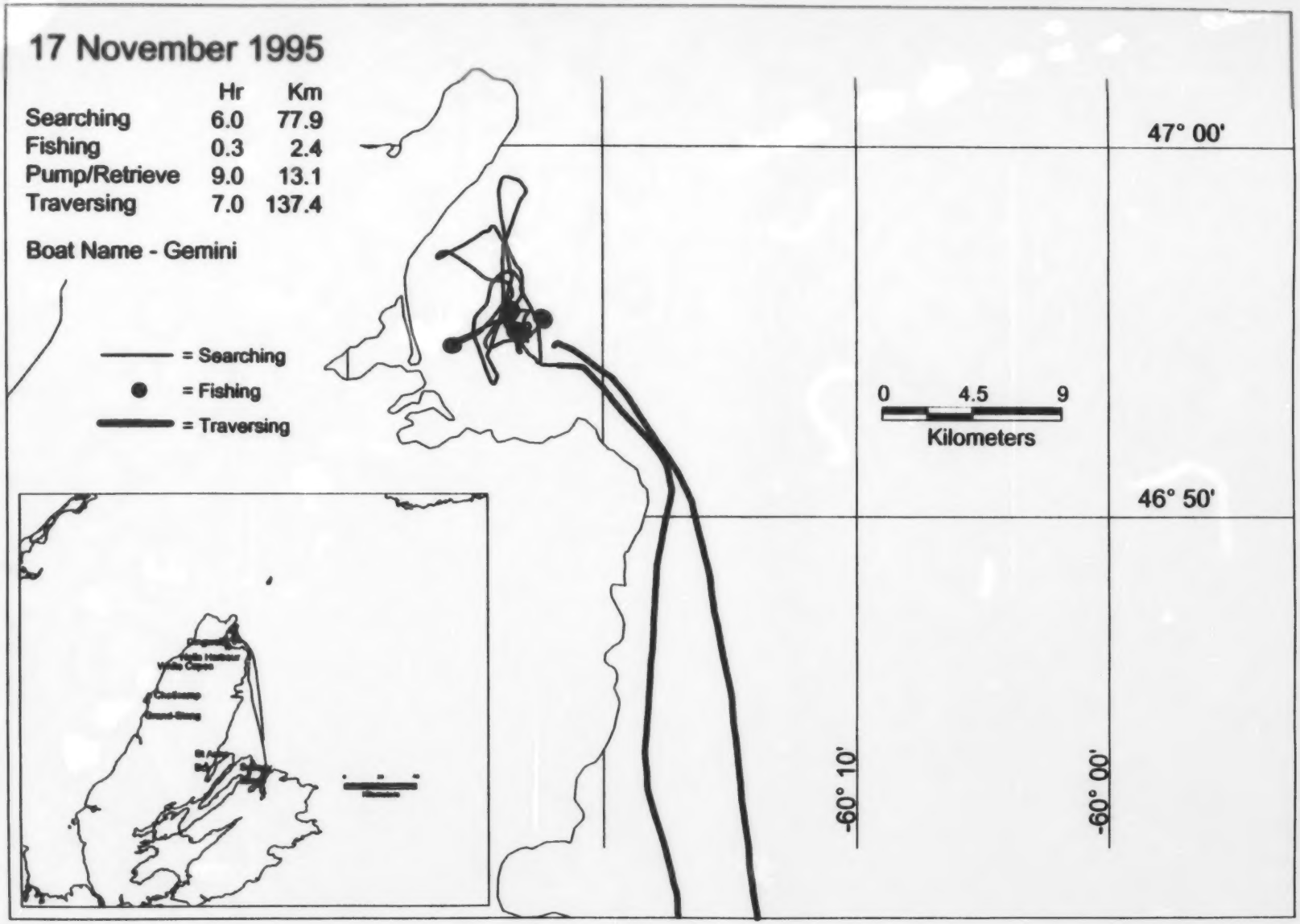

06 November 1995
Hr Km
Searching 7.5 108.7
Fishing 0.3 2.7
Pump/Retrieve 3.0 5.8
Traversing 6.7 126.9
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 10 20
Kilometers
47° 00'
46° 30'
-60° 00'
-59° 30'
Kerrs Point
Dingwall
Neils Harbour
White Capes
Ingonish
Cheticamp
Grand - Etang
Cape-Breton
Margaree Harbour
St Anns Bay
Cape Dauphin
Glace Bay

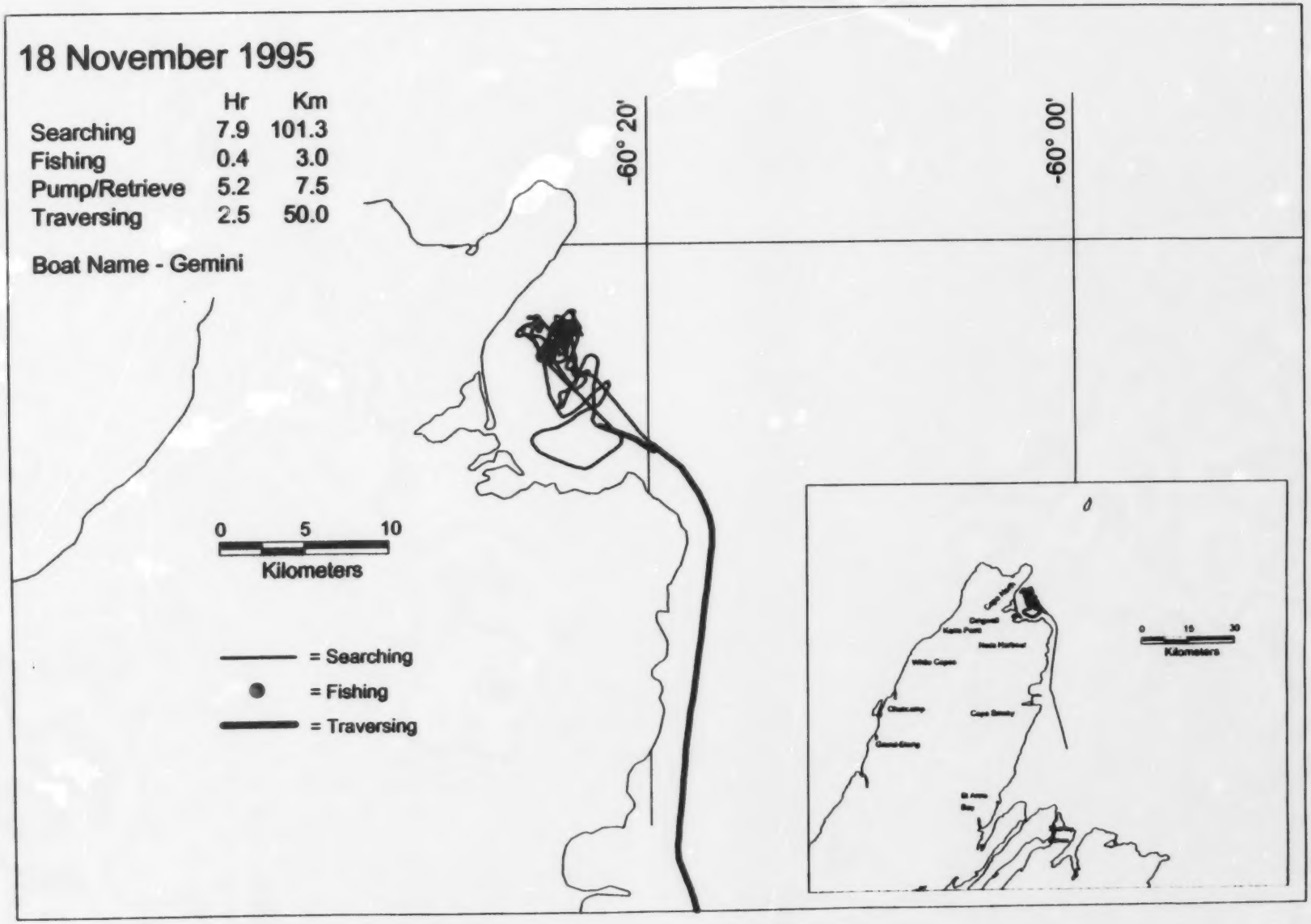

09 November 1995
Hr Km
Searching 5.3 80.5
Fishing 0.6 4.5
Pump/Retrieve 6.8 12.8
Traversing 8.9 145.0
Boat Name - Gemini
-60° 40'
-60° 20'
-60° 00'
47° 00'
46° 40'
= Searching
= Fishing
= Traversing
0 5 10
Kilometers

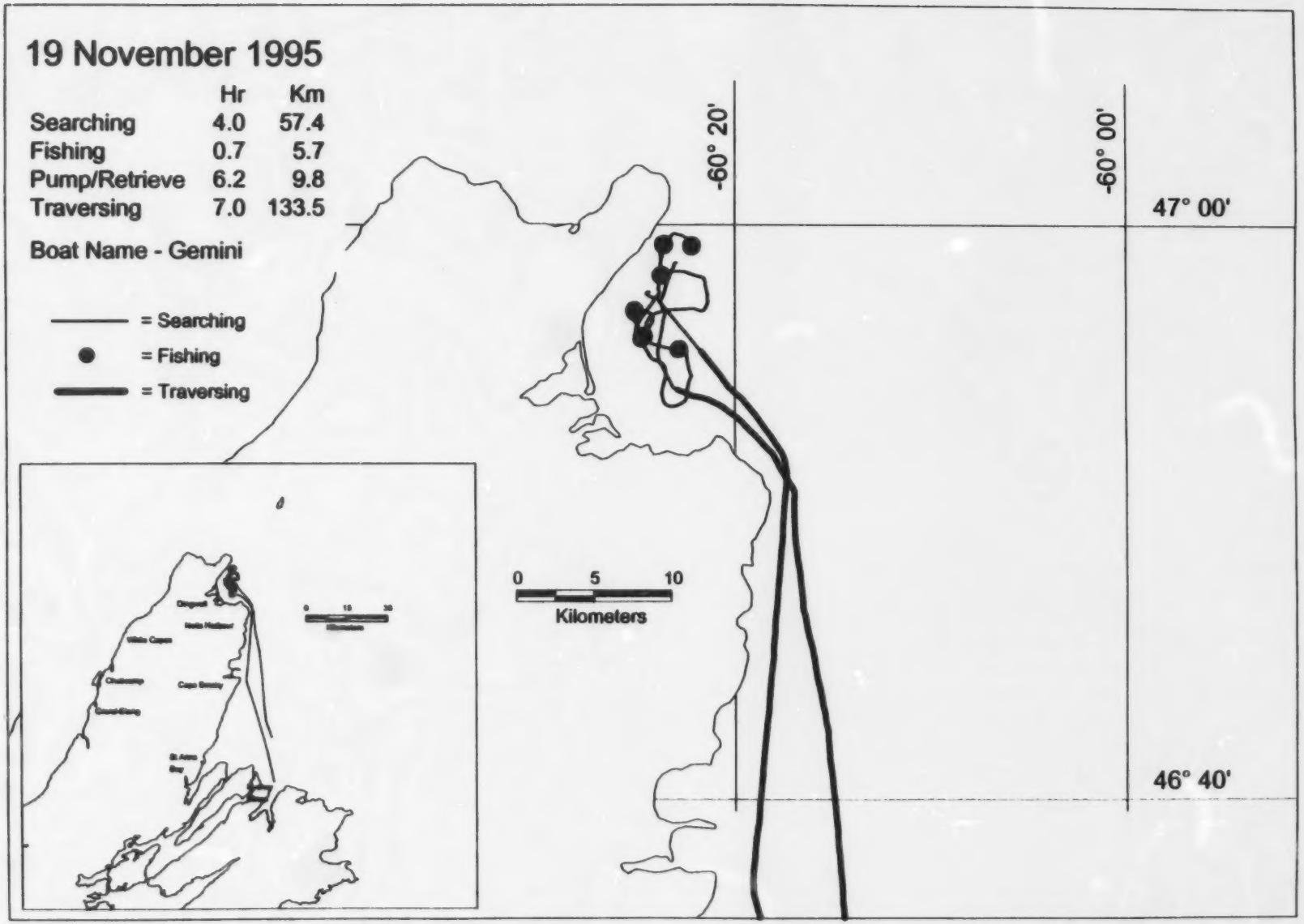

10 November 1995
Hr Km
Searching 2.7 42.9
Fishing 0.1 0.9
Pump/Retrieve 1.5 3.6
Traversing 10.0 81.7
Boat Name - Gemini
0 3 6
Kilometers
= Searching
= Fishing
= Traversing
-60° 20'
-60° 10'
47° 00'
46° 50'

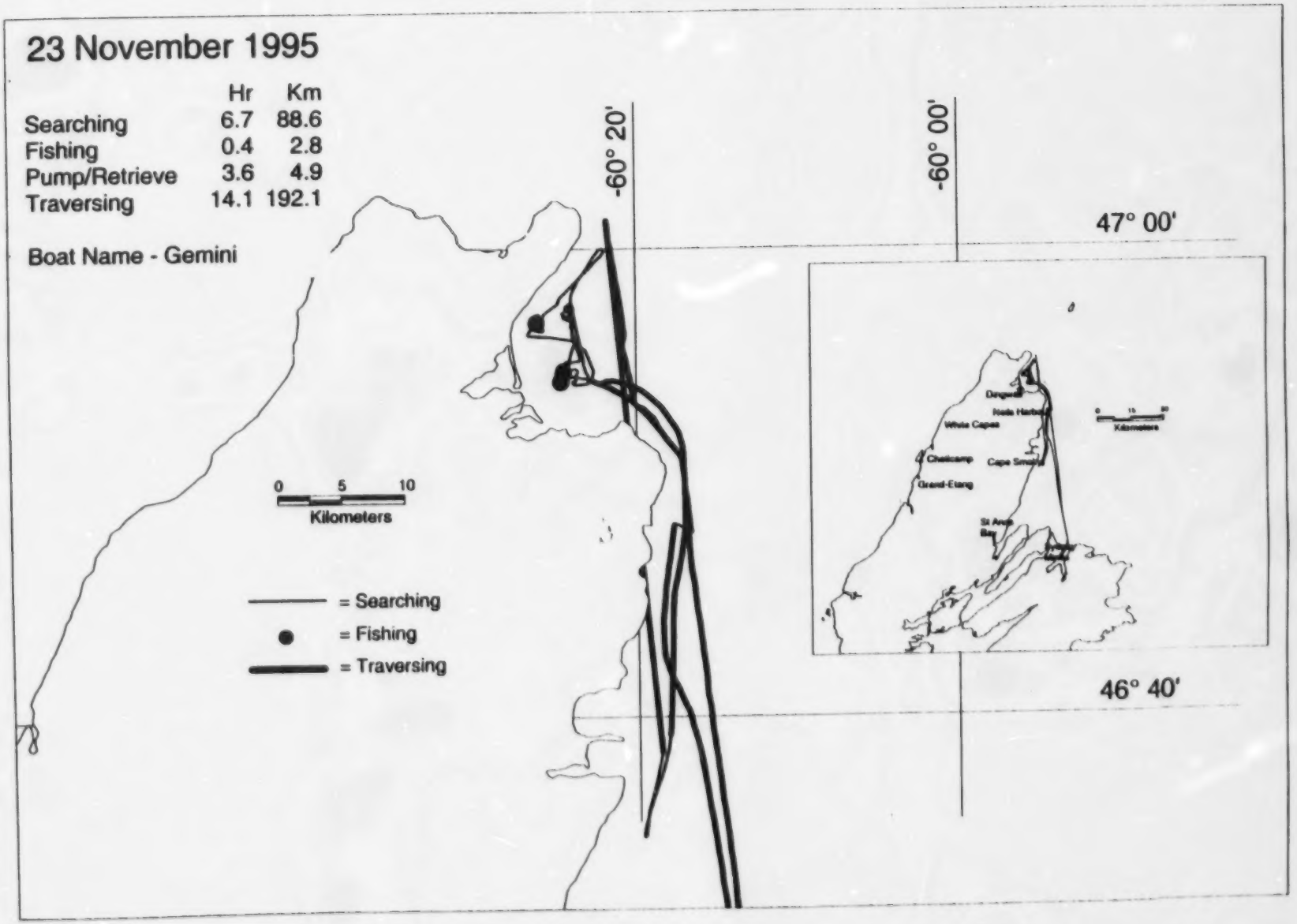

11 November 1995
Hr Km
Searching 6.0 82.0
Fishing 0.3 3.0
Pump/Retrieve 4.2 6.1
Traversing 6.9 120.0
Boat Name - Gemini
White Capes
Hare Harbour
Chelcamp
Grand-Etang
Margaree Harbour
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
46° 40'
-60° 20'
-60° 00'
-59° 40'

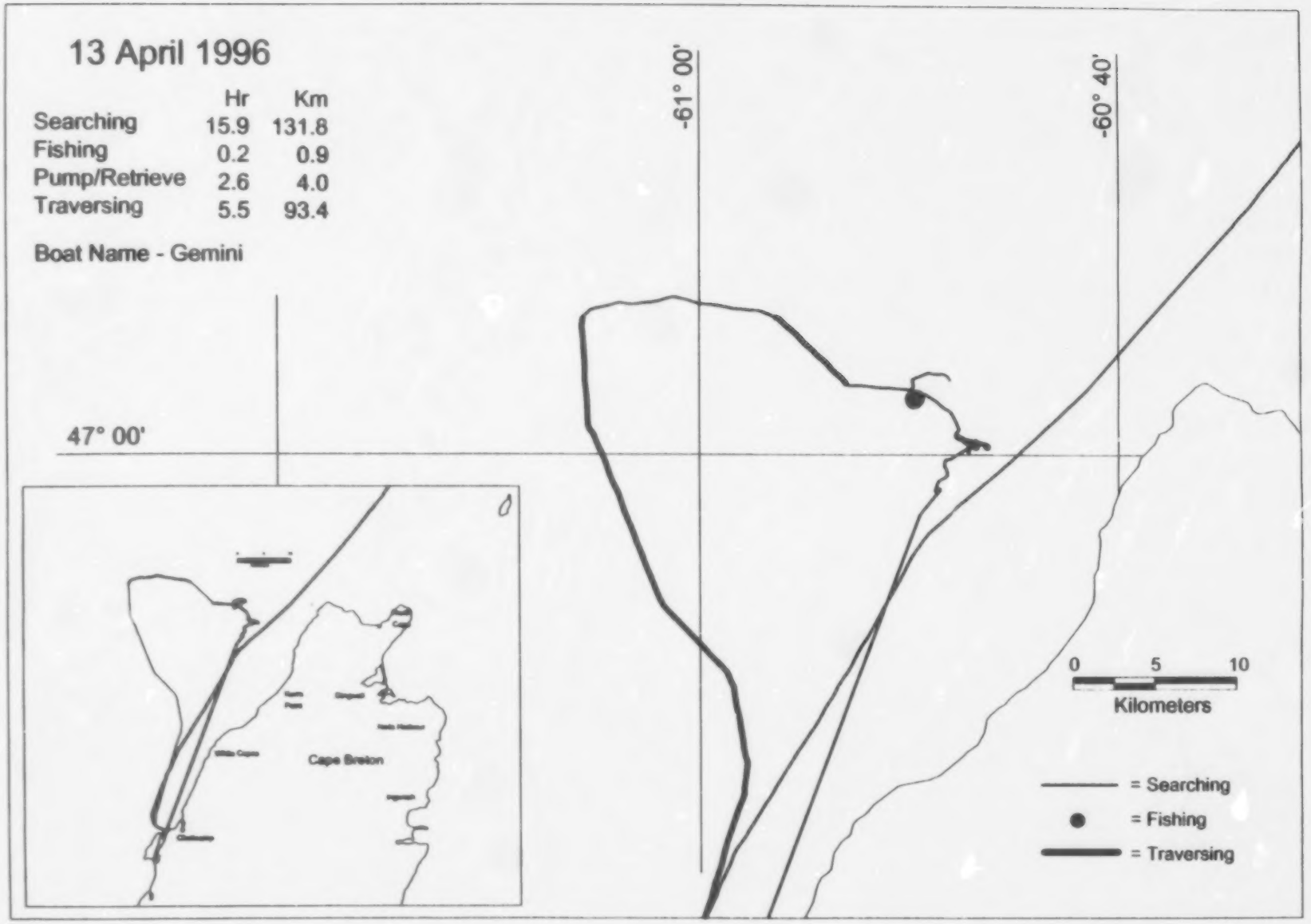

13 November 1995
Hr Km
Searching 19.6 111.5
Boat Name - Gemini
-60° 00'
-59° 35'
-59° 10'
Cape North
Dingwall
Kerrs Point
Neils Harbour
White Capes
46° 40'
Cheticamp
Cape Smoky
Grand-Etang
St Anns Bay
= Searching
46° 15'
Sydney Mines

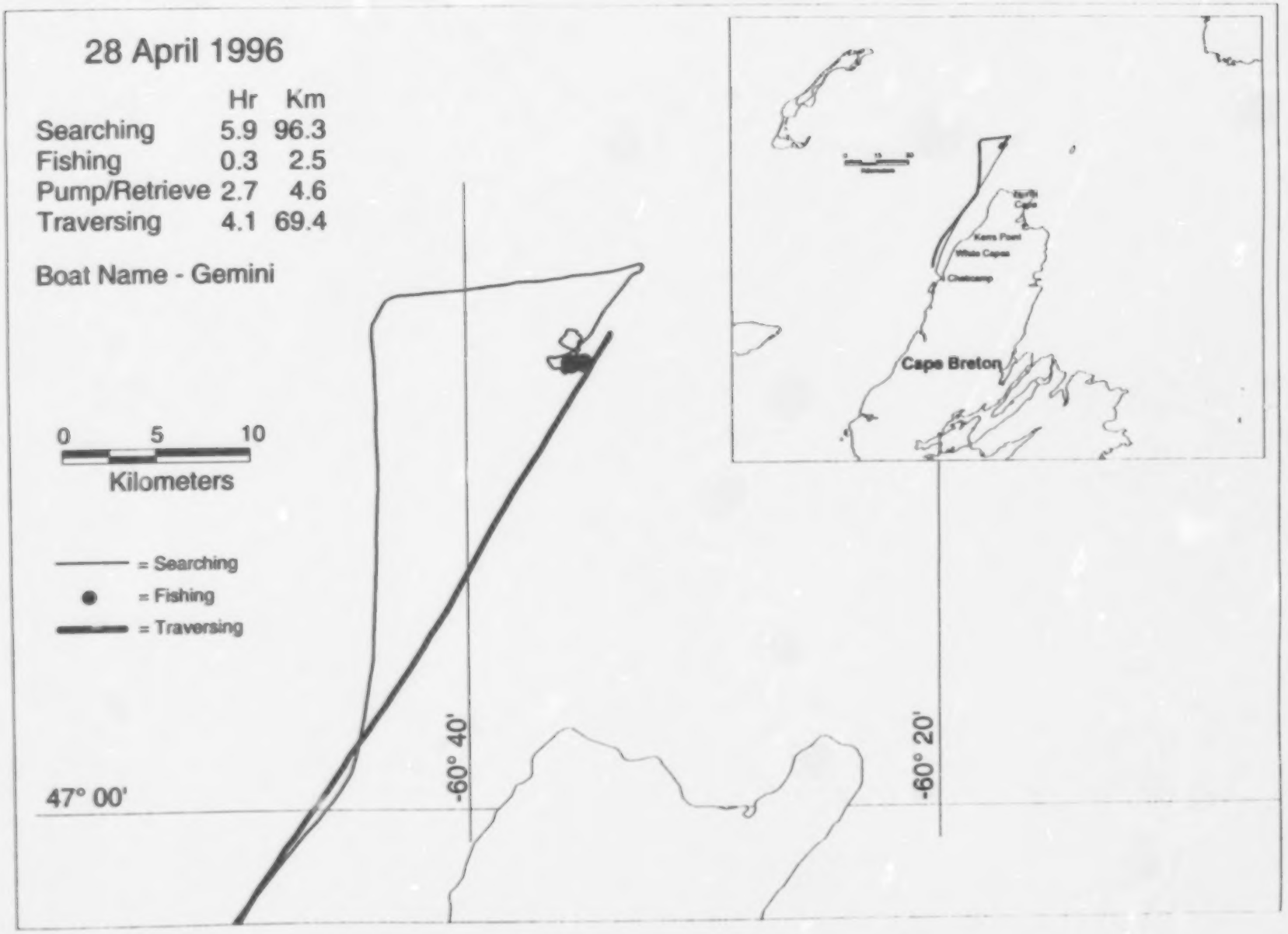

17 November 1995
Hr Km
Searching 6.0 77.9
Fishing 0.3 2.4
Pump/Retrieve 9.0 13.1
Traversing 7.0 137.4
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 4.5 9
Kilometers
47° 00'
46° 50'
-60° 10'
-60° 00'

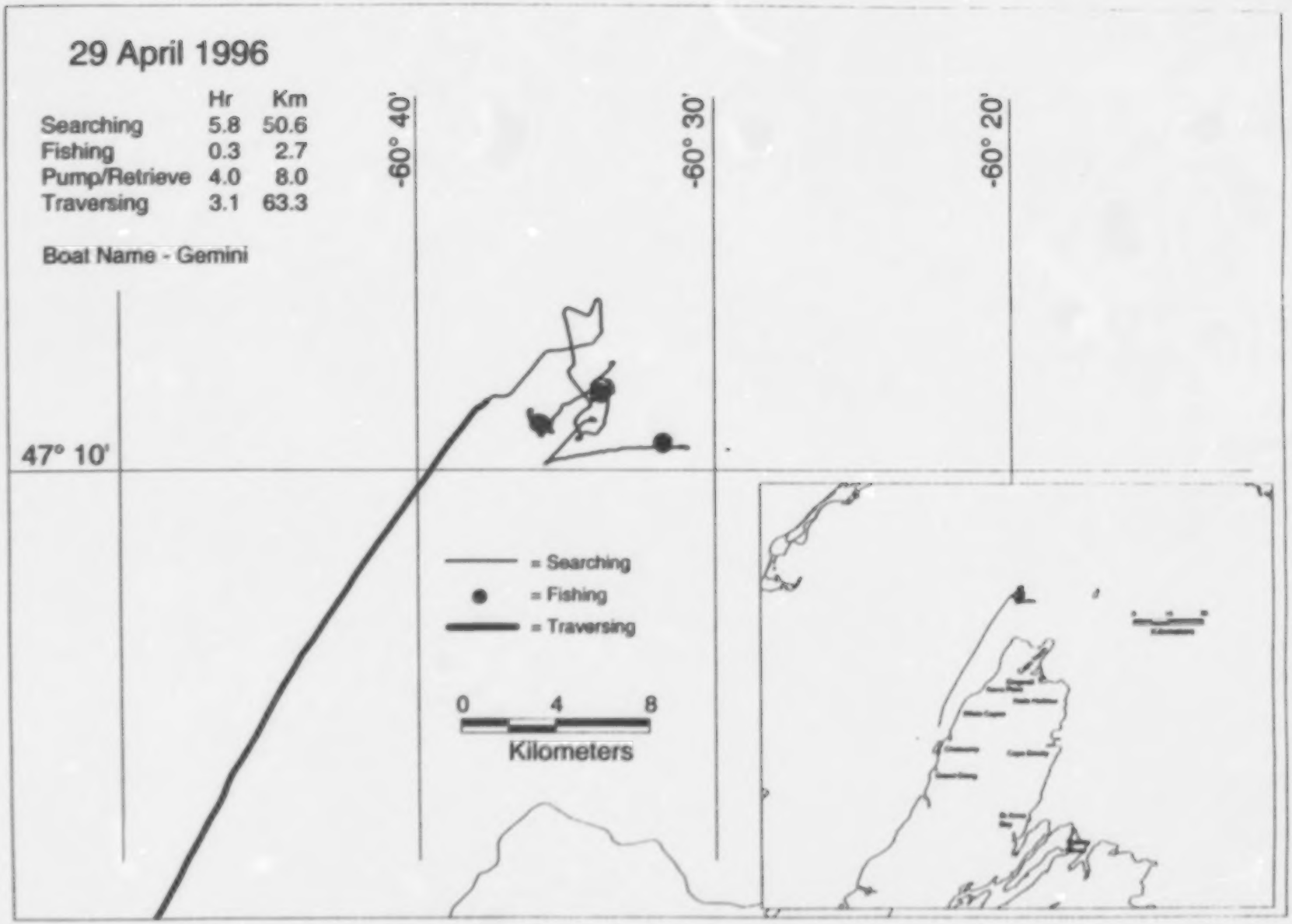

18 November 1995
Hr Km
Searching 7.9 101.3
Fishing 0.4 3.0
Pump/Retrieve 5.2 7.5
Traversing 2.5 50.0
Boat Name - Gemini
-60° 20'
-60° 00'
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
0 15 30
Kilometers

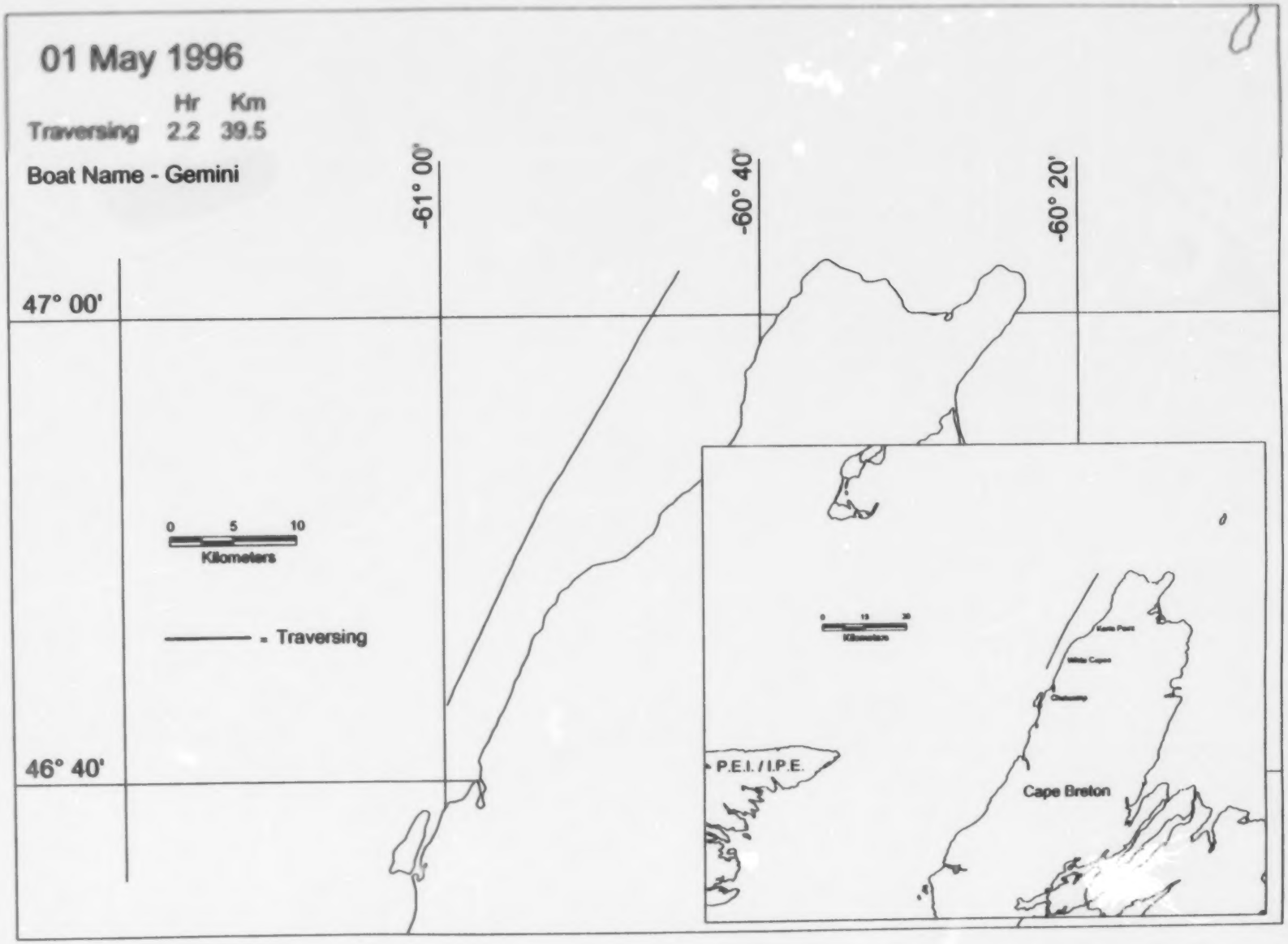

19 November 1995
Hr Km
Searching 4.0 57.4
Fishing 0.7 5.7
Pump/Retrieve 6.2 9.8
Traversing 7.0 133.5
Boat Name - Gemini
= Searching
= Fishing
= Traversing
-60° 20'
-60° 00'
47° 00'
46° 40'
0 5 10
Kilometers

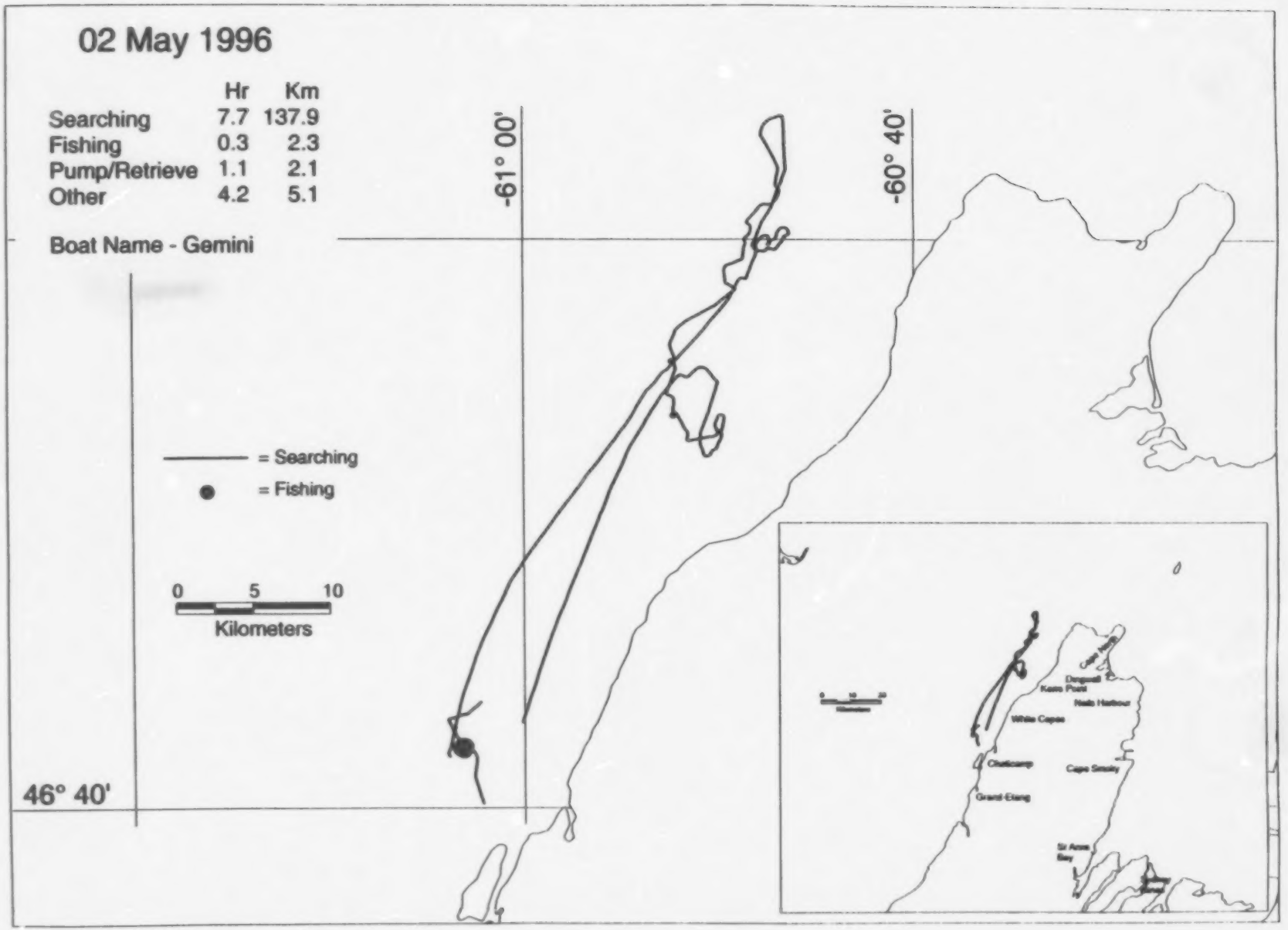

23 November 1995
Hr Km
Searching 6.7 88.6
Fishing 0.4 2.8
Pump/Retrieve 3.6 4.9
Traversing 14.1 192.1
Boat Name - Gemini
-60° 20'
-60° 00'
47° 00'
46° 40'
0 5 10
Kilometers
= Searching
= Fishing
= Traversing

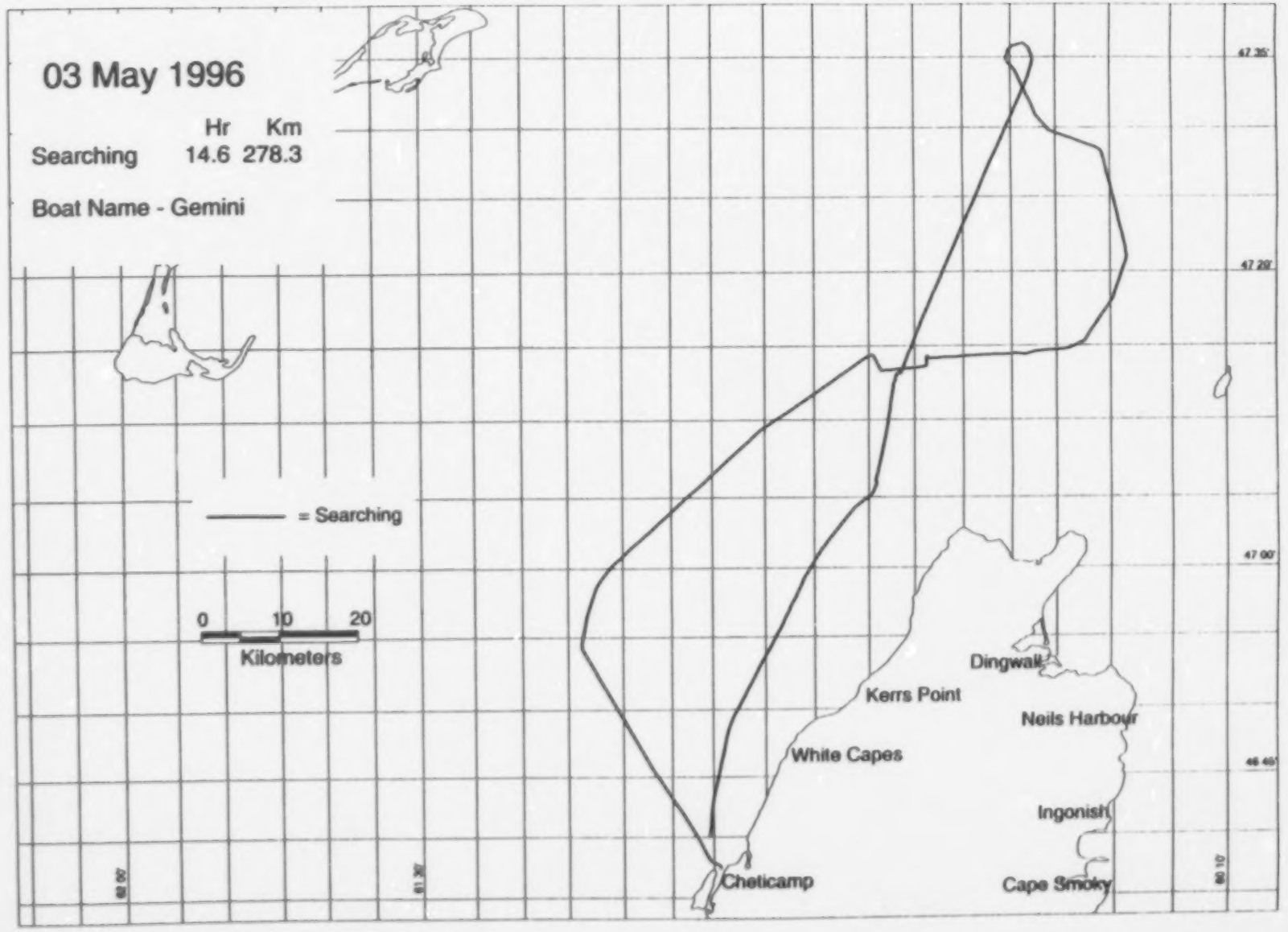

13 April 1996
Hr Km
Searching 15.9 131.8
Fishing 0.2 0.9
Pump/Retrieve 2.6 4.0
Traversing 5.5 93.4
Boat Name - Gemini
-61° 00'
-60° 40'
47° 00'
Cape Breton
0 5 10
Kilometers
= Searching
= Fishing
= Traversing

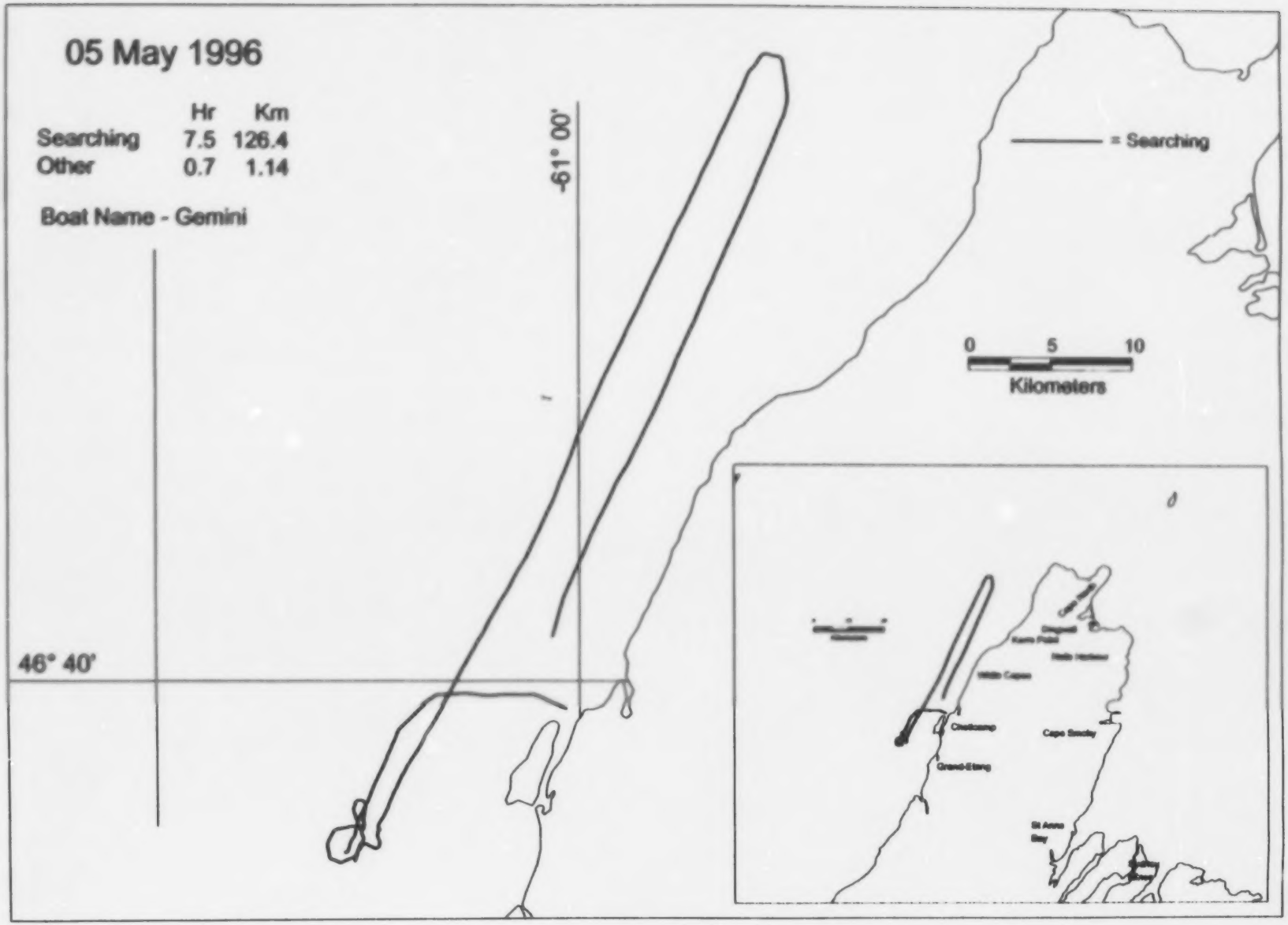

28 April 1996
Hr Km
Searching 5.9 96.3
Fishing 0.3 2.5
Pump/Retrieve 2.7 4.6
Traversing 4.1 69.4
Boat Name - Gemini
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
47° 00'
-60° 40'
-60° 20'
Cape Breton

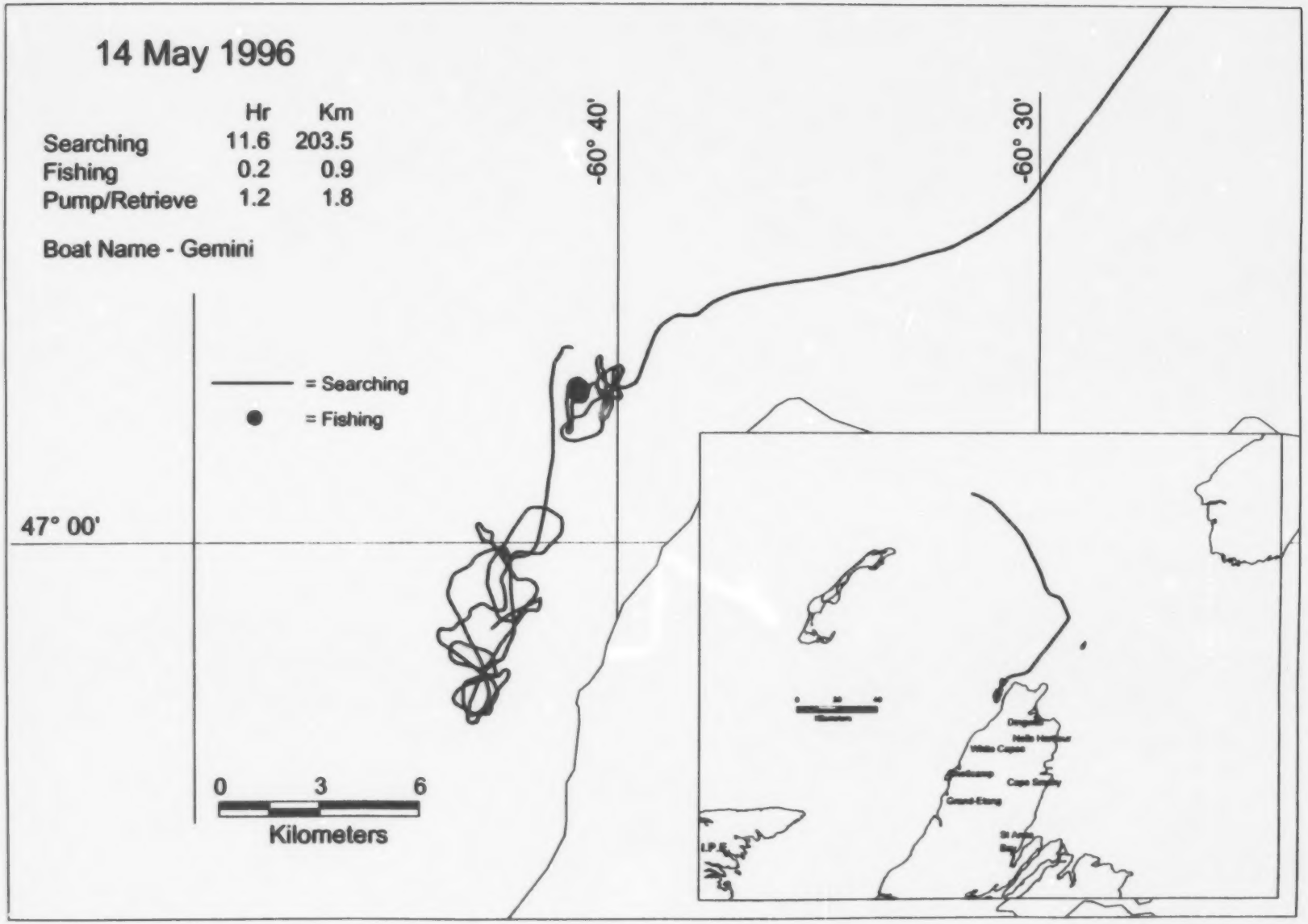

29 April 1996
Hr Km
Searching 5.8 50.6
Fishing 0.3 2.7
Pump/Retrieve 4.0 8.0
Traversing 3.1 63.3
Boat Name - Gemini
-60° 40'
-60° 30'
-60° 20'
47° 10'
= Searching
= Fishing
= Traversing
0 4 8
Kilometers

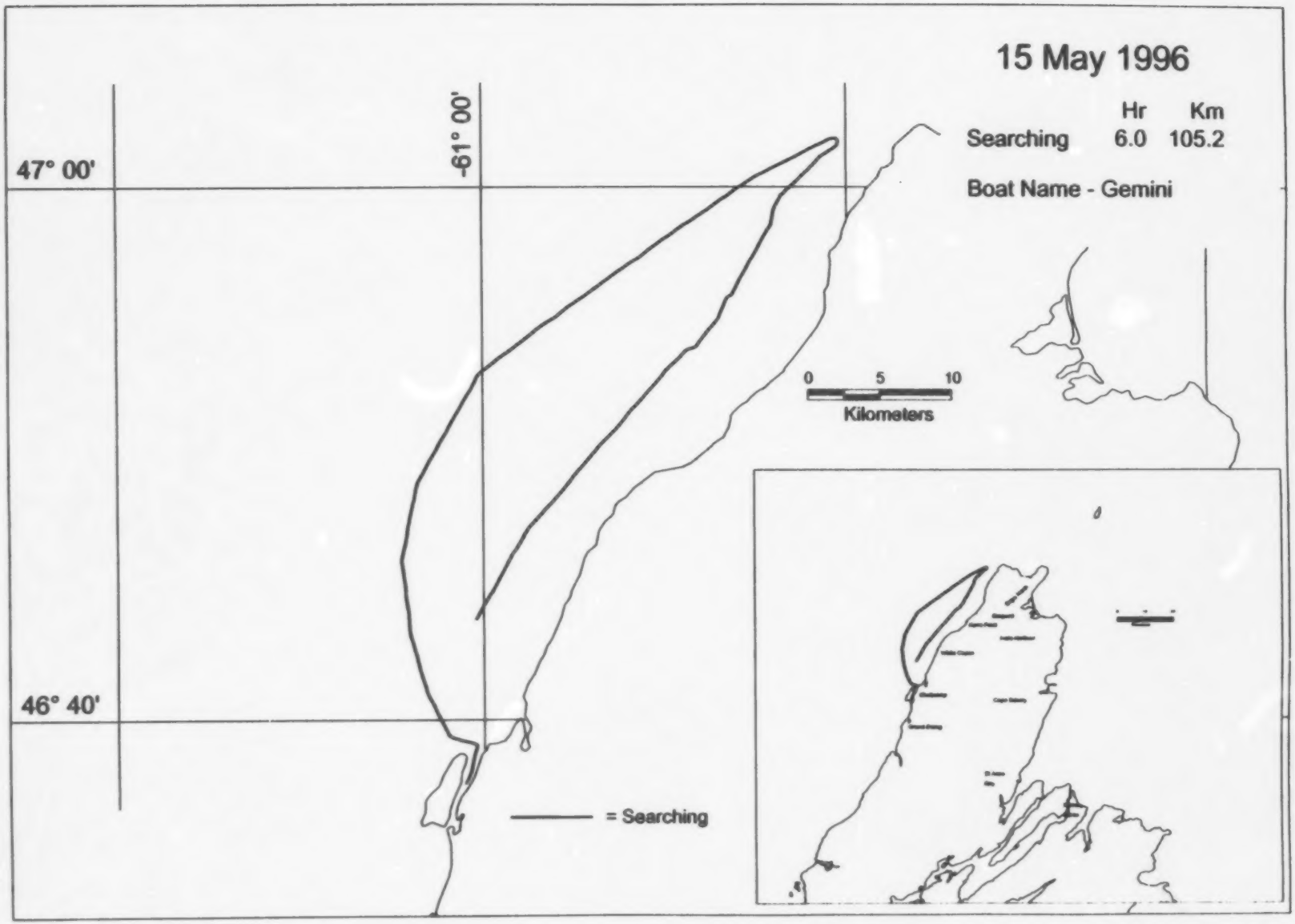

01 May 1996
Hr Km
Traversing 2.2 39.5
Boat Name - Gemini
-61° 00'
-60° 40'
-60° 20'
47° 00'
46° 40'
0 5 10
Kilometers
= Traversing
P.E.I. / I.P.E.
Cape Breton

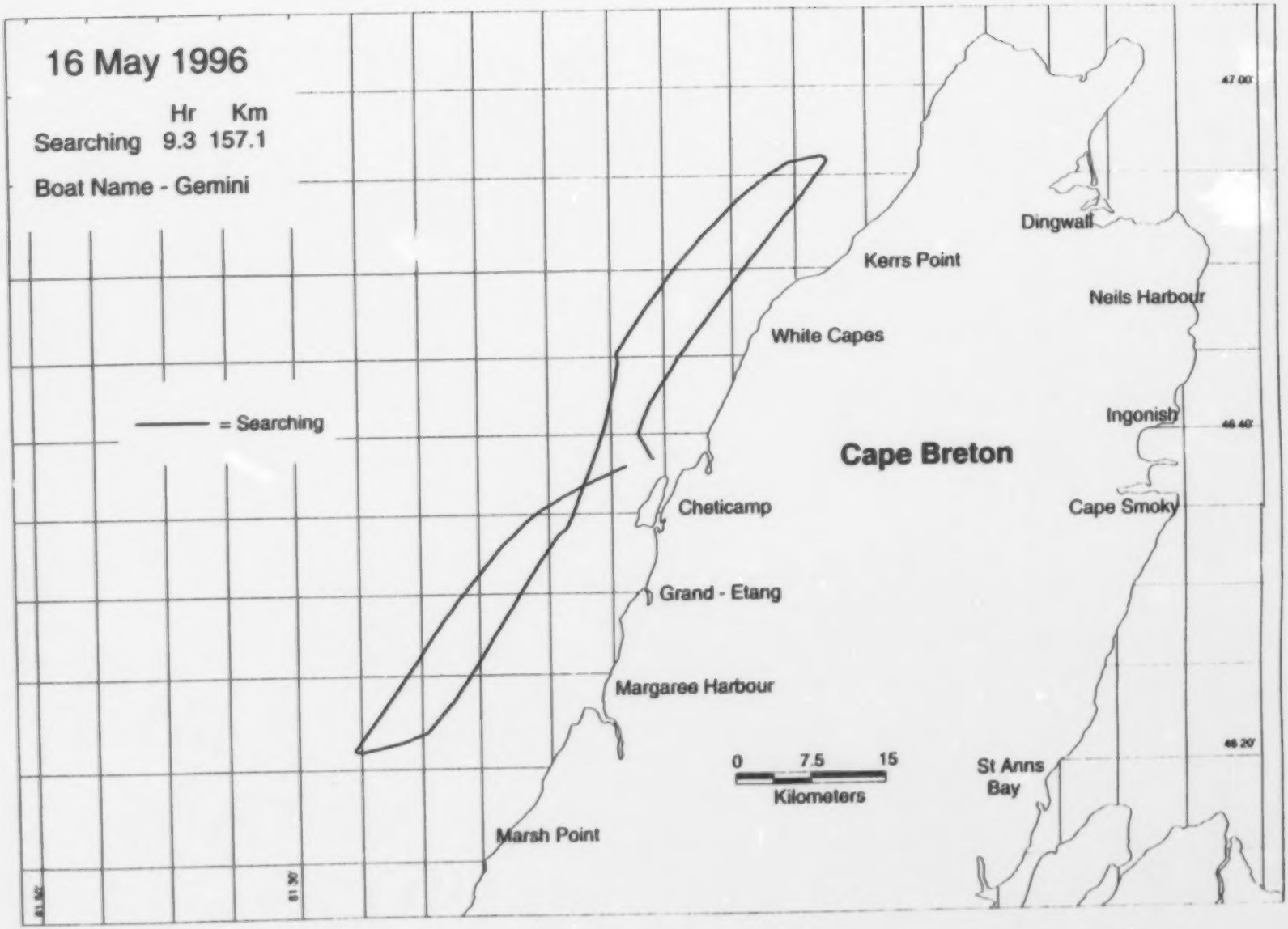

02 May 1996
Hr Km
Searching 7.7 137.9
Fishing 0.3 2.3
Pump/Retrieve 1.1 2.1
Other 4.2 5.1
Boat Name - Gemini
-61° 00'
-60° 40'
46° 40'
= Searching
= Fishing
0 5 10
Kilometers

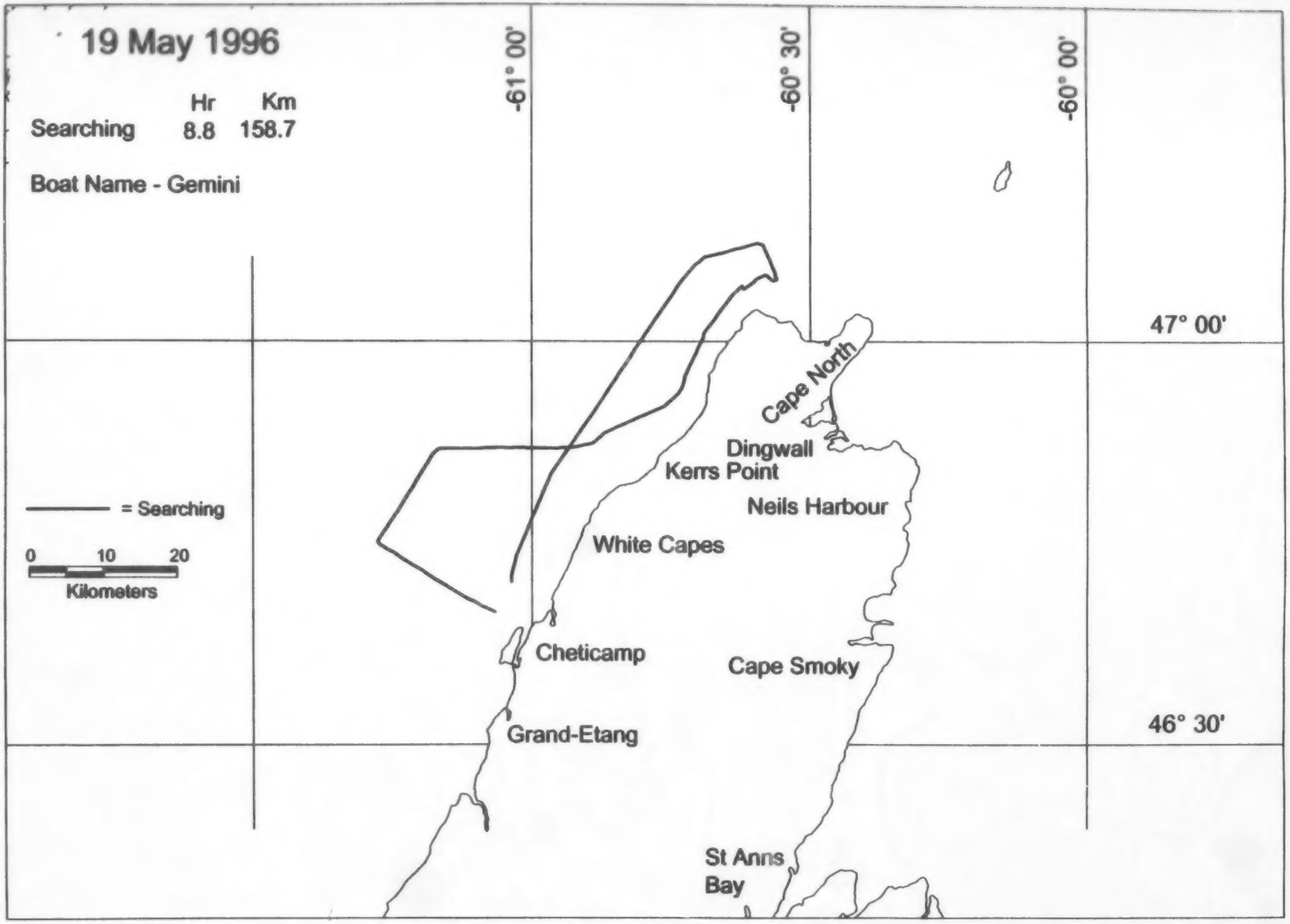

03 May 1996
Hr Km
Searching 14.6 278.3
Boat Name - Gemini
= Searching
0 10 20
Kilometers
Dingwall
Kerrs Point
Neils Harbour
White Capes
Ingonish
Cheticamp
Cape Smoky
47 35'
47 20'
47 00'
46 45'

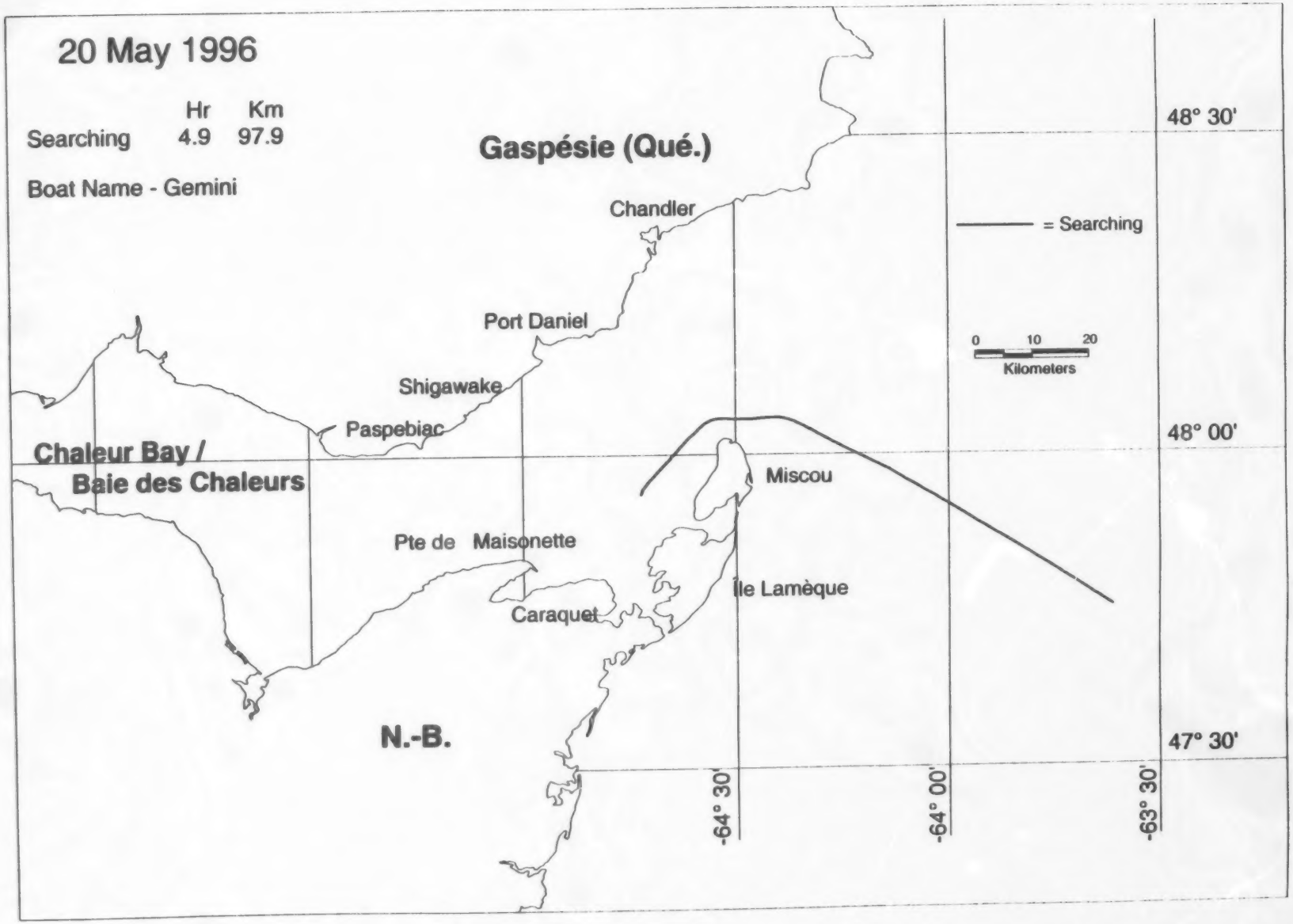

05 May 1996
Hr Km
Searching 7.5 126.4
Other 0.7 1.14
Boat Name - Gemini
-61° 00'
46° 40'
= Searching
0 5 10
Kilometers

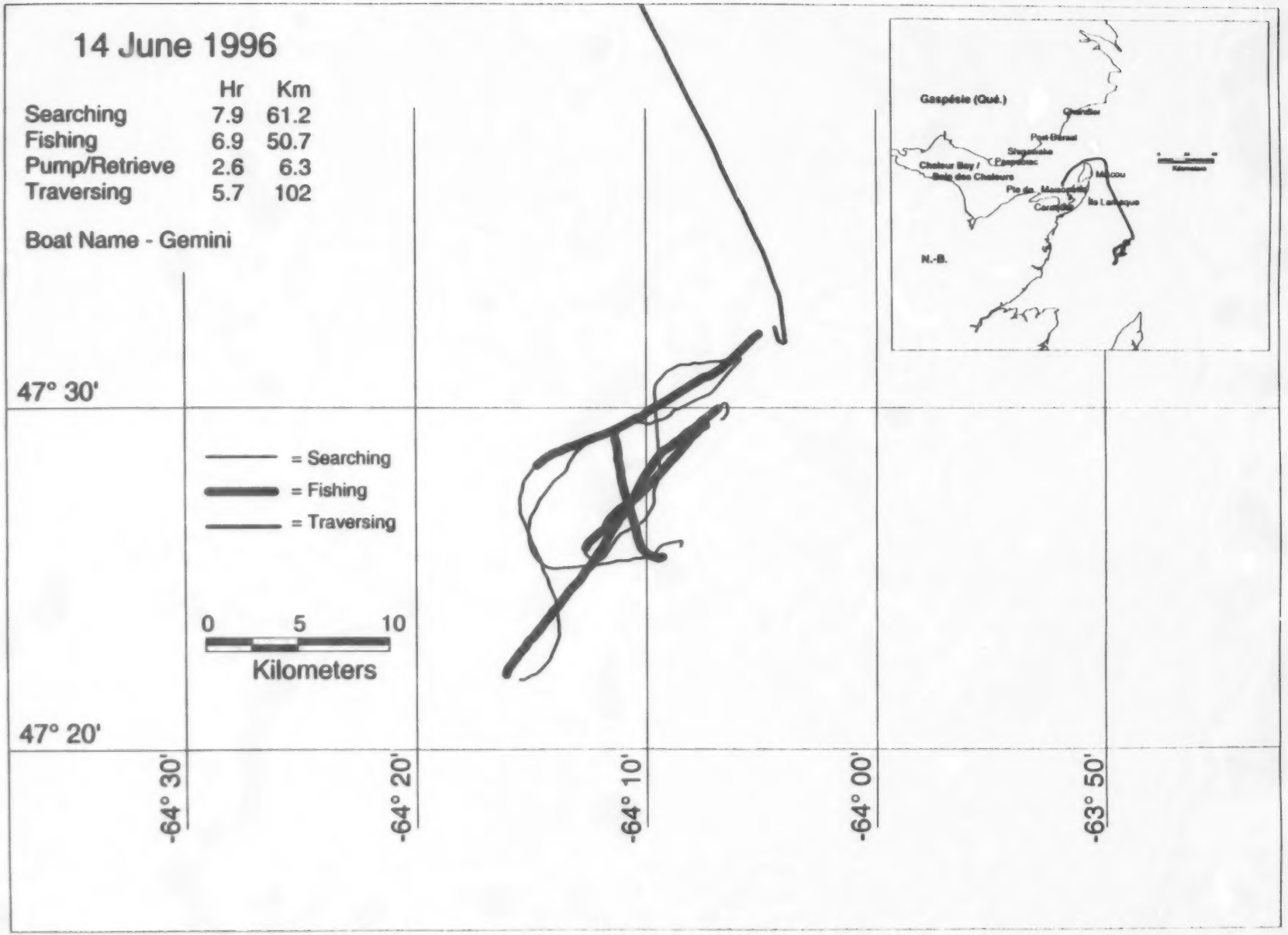

14 May 1996
Hr Km
Searching 11.6 203.5
Fishing 0.2 0.9
Pump/Retrieve 1.2 1.8
Boat Name - Gemini
-60° 40'
-60° 30'
47° 00'
= Searching
= Fishing
0 3 6
Kilometers

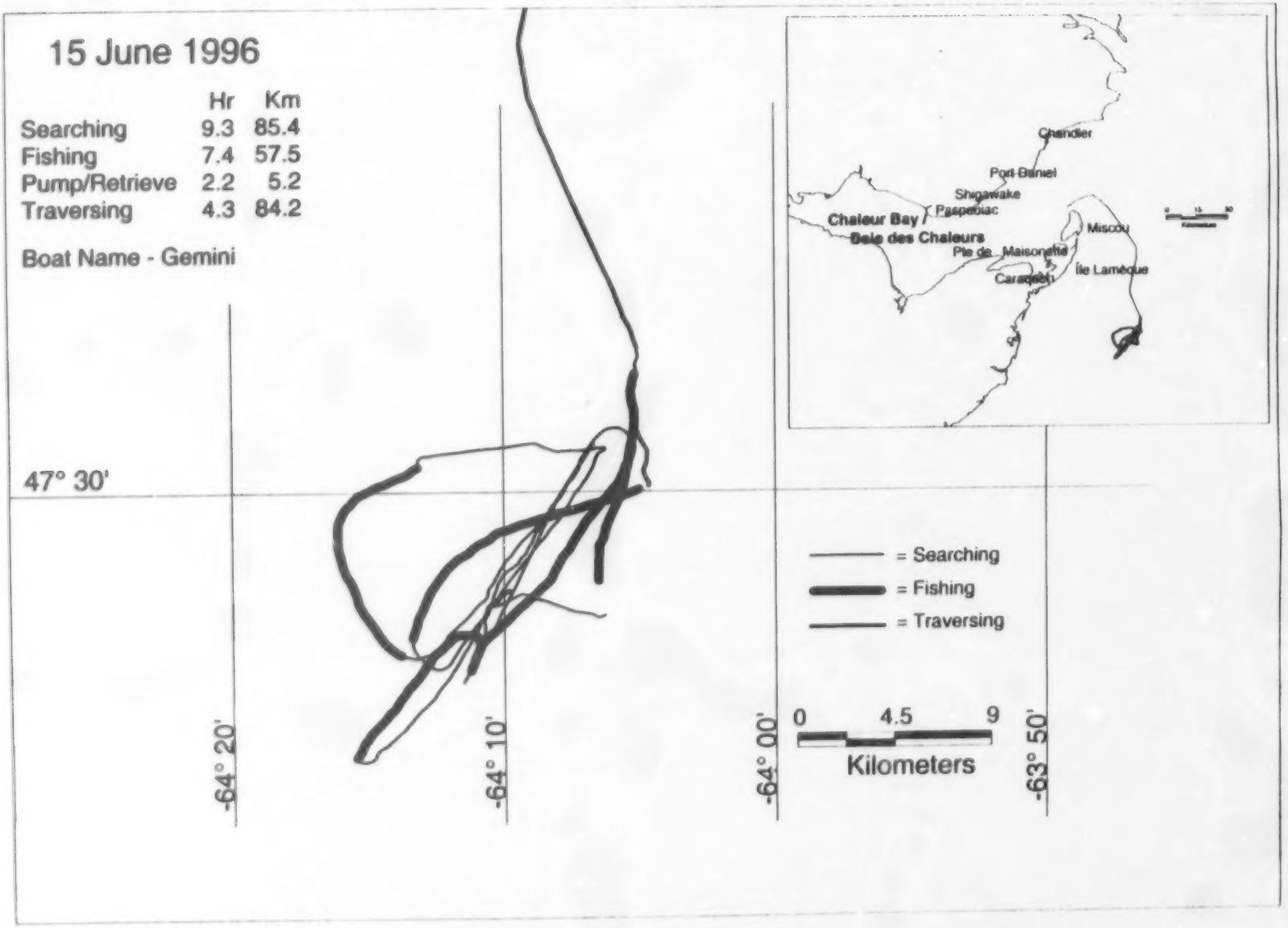

15 May 1996
Hr Km
Searching 6.0 105.2
Boat Name - Gemini
47° 00'
-61° 00'
46° 40'
0 5 10
Kilometers
= Searching

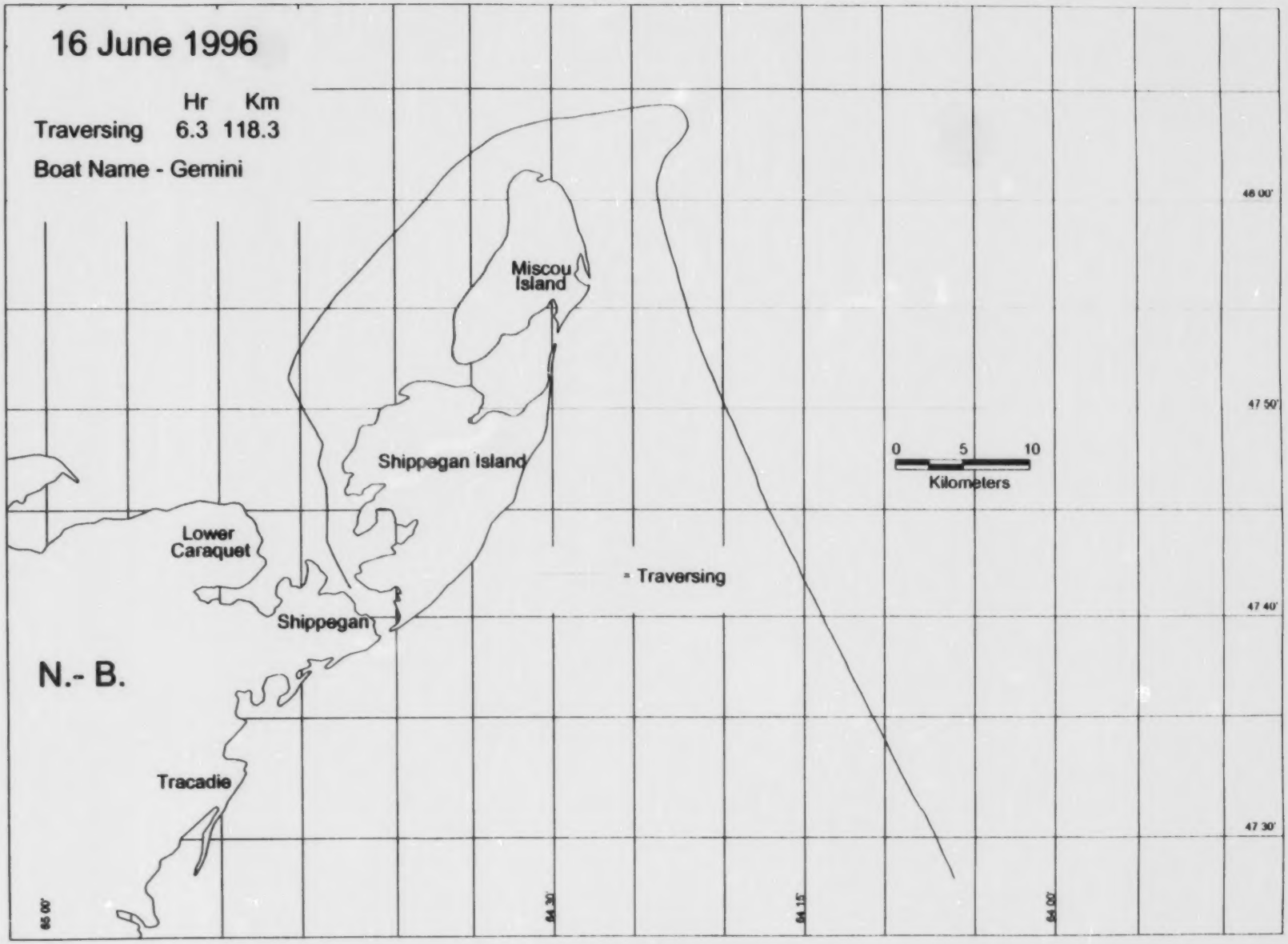

16 May 1996
Hr Km
Searching 9.3 157.1
Boat Name - Gemini
= Searching
Dingwall
Kerrs Point
Neils Harbour
White Capes
Ingonish
Cape Breton
Cheticamp
Cape Smoky
Grand - Etang
Margaree Harbour
0 7.5 15
Kilometers
St Anns Bay
Marsh Point
47 00'
46 40'
46 20'
61 30'
61 10'

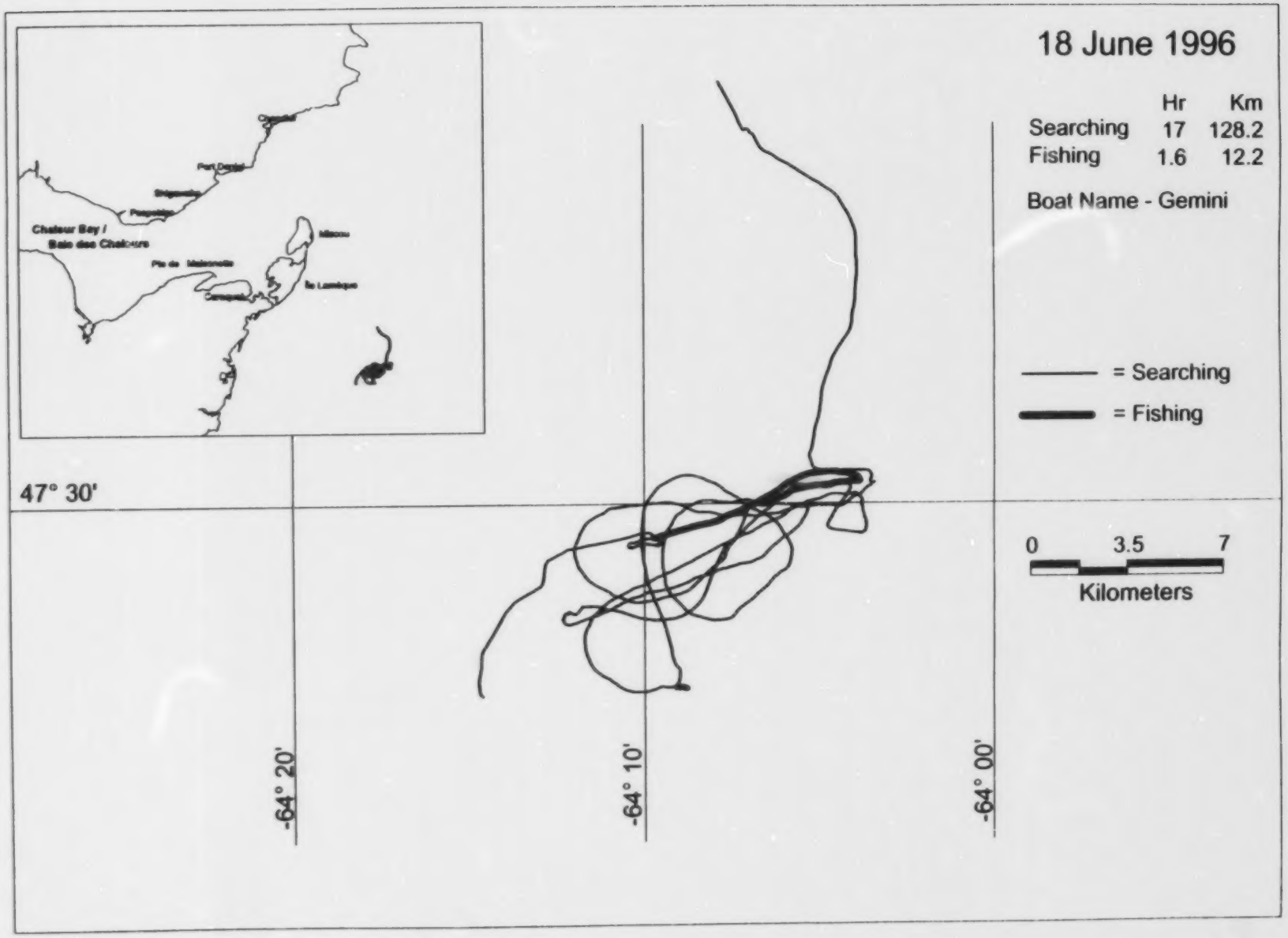

19 May 1996
Hr Km
Searching 8.8 158.7
Boat Name - Gemini
-61° 00'
-60° 30'
-60° 00'
47° 00'
46° 30'
Cape North
Dingwall
Kerrs Point
Neils Harbour
White Capes
Cheticamp
Cape Smoky
Grand-Etang
St Anns Bay
= Searching
0 10 20
Kilometers

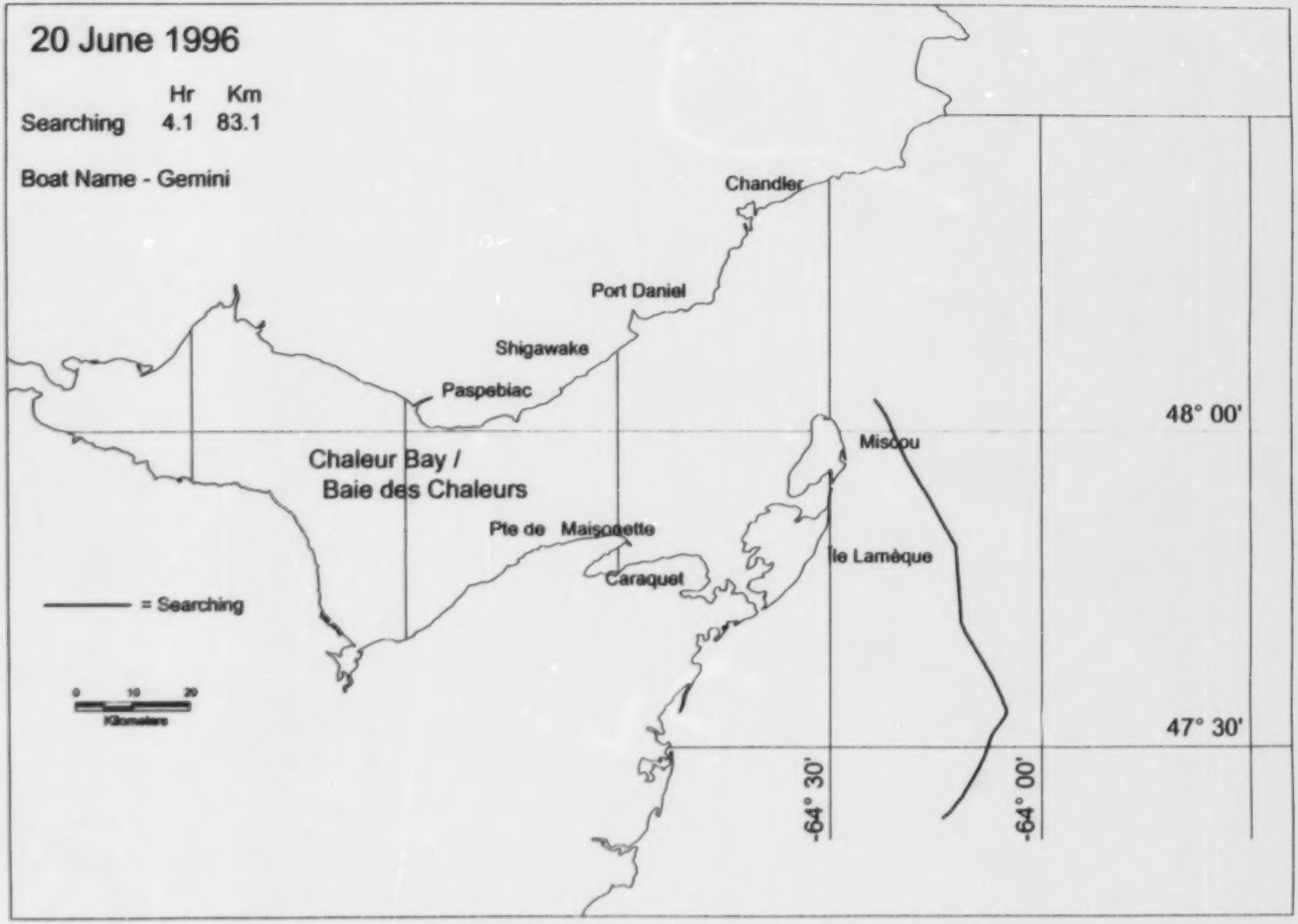

20 May 1996
Hr Km
Searching 4.9 97.9
Boat Name - Gemini
Gaspésie (Qué.)
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonette
Caraquet
Miscou
Île Lamèque
N.-B.
= Searching
0 10 20
Kilometers
48° 30'
48° 00'
47° 30'
-64° 30'
-64° 00'
-63° 30'

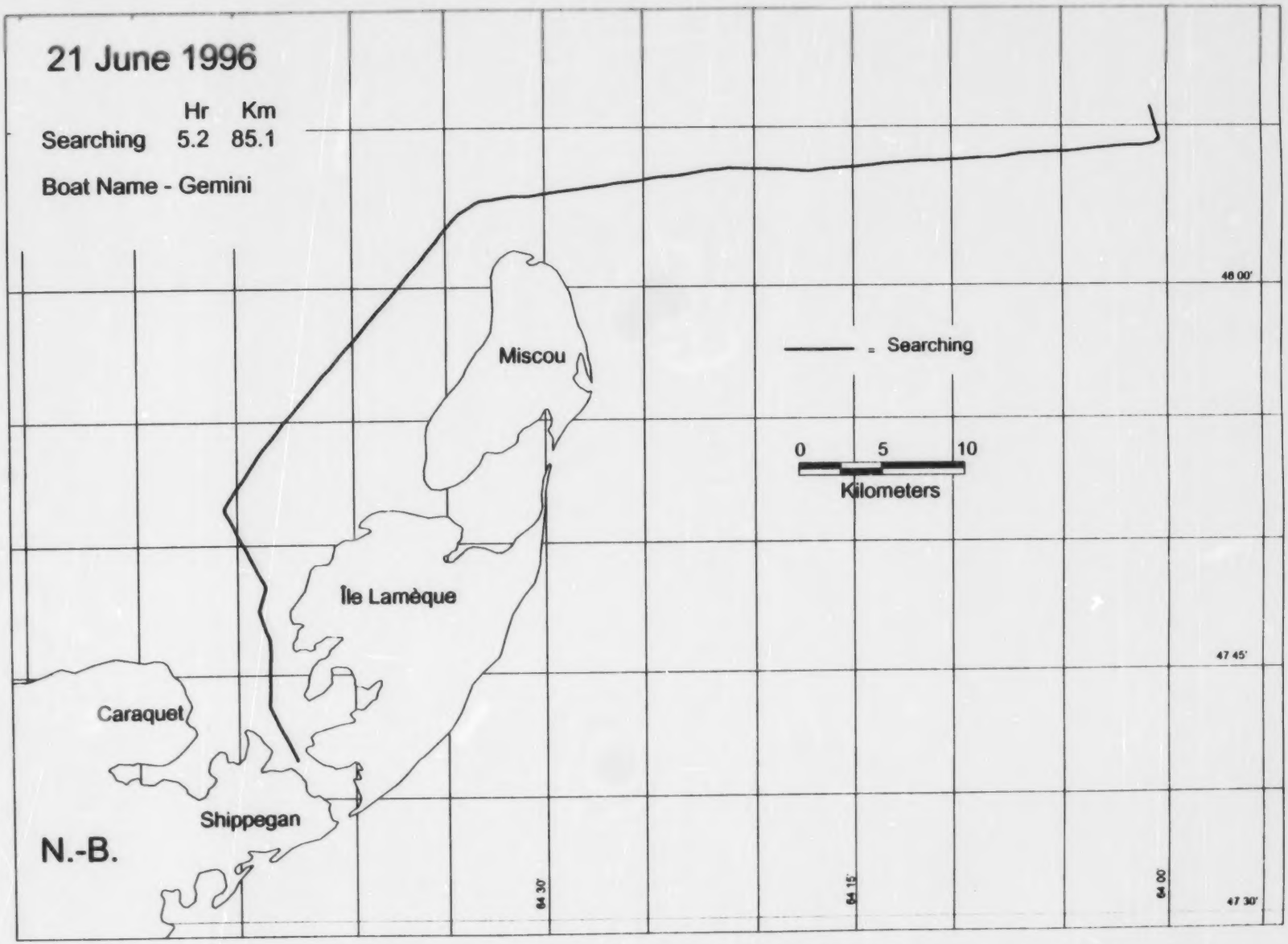

14 June 1996
Hr Km
Searching 7.9 61.2
Fishing 6.9 50.7
Pump/Retrieve 2.6 6.3
Traversing 5.7 102
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
47° 30'
47° 20'
-64° 30'
-64° 20'
-64° 10'
-64° 00'
-63° 50'
Gaspésie (Qué.)
Chandler
Port-Daniel
Shigawake
Paspébiac
Chaleur Bay / Baie des Chaleurs
Pte-de-Maisonnette
Miscou
Caraquet
Ile Lamèque
N.-B.

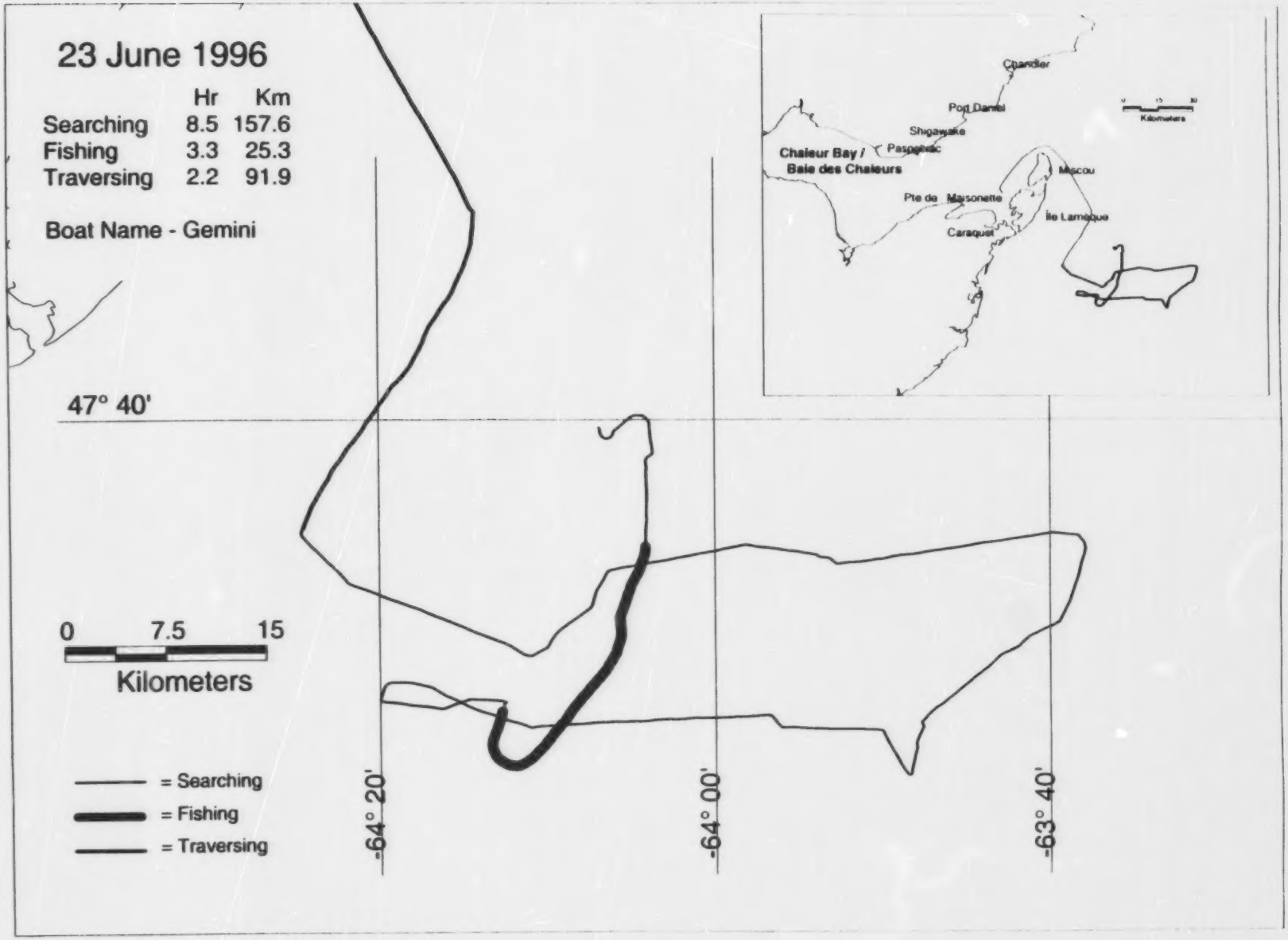

15 June 1996
Hr Km
Searching 9.3 85.4
Fishing 7.4 57.5
Pump/Retrieve 2.2 5.2
Traversing 4.3 84.2
Boat Name - Gemini
47° 30'
-64° 20'
-64° 10'
-64° 00'
-63° 50'
= Searching
= Fishing
= Traversing
0 4.5 9
Kilometers
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay
Baie des Chaleurs
Miscou
Pte de Maisonnette
Caraquet
Île Lamèque

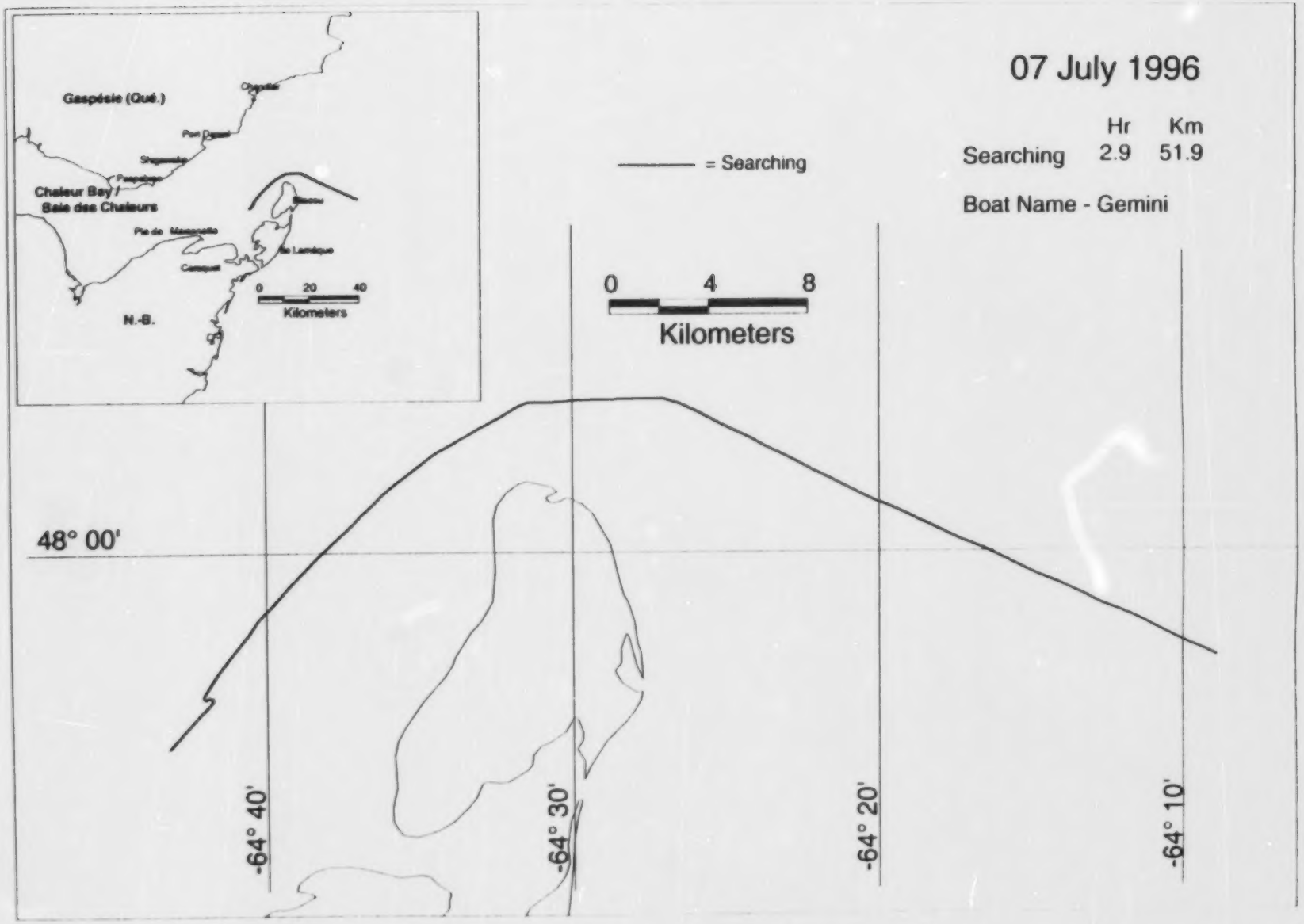

16 June 1996
Hr Km
Traversing 6.3 118.3
Boat Name - Gemini
Miscou Island
Shippegan Island
Lower Caraquet
Shippegan
Tracadie
N.- B.
Traversing
0 5 10
Kilometers
48 00'
47 50'
47 40'
47 30'
65 00'
64 30'
64 15'
64 00'

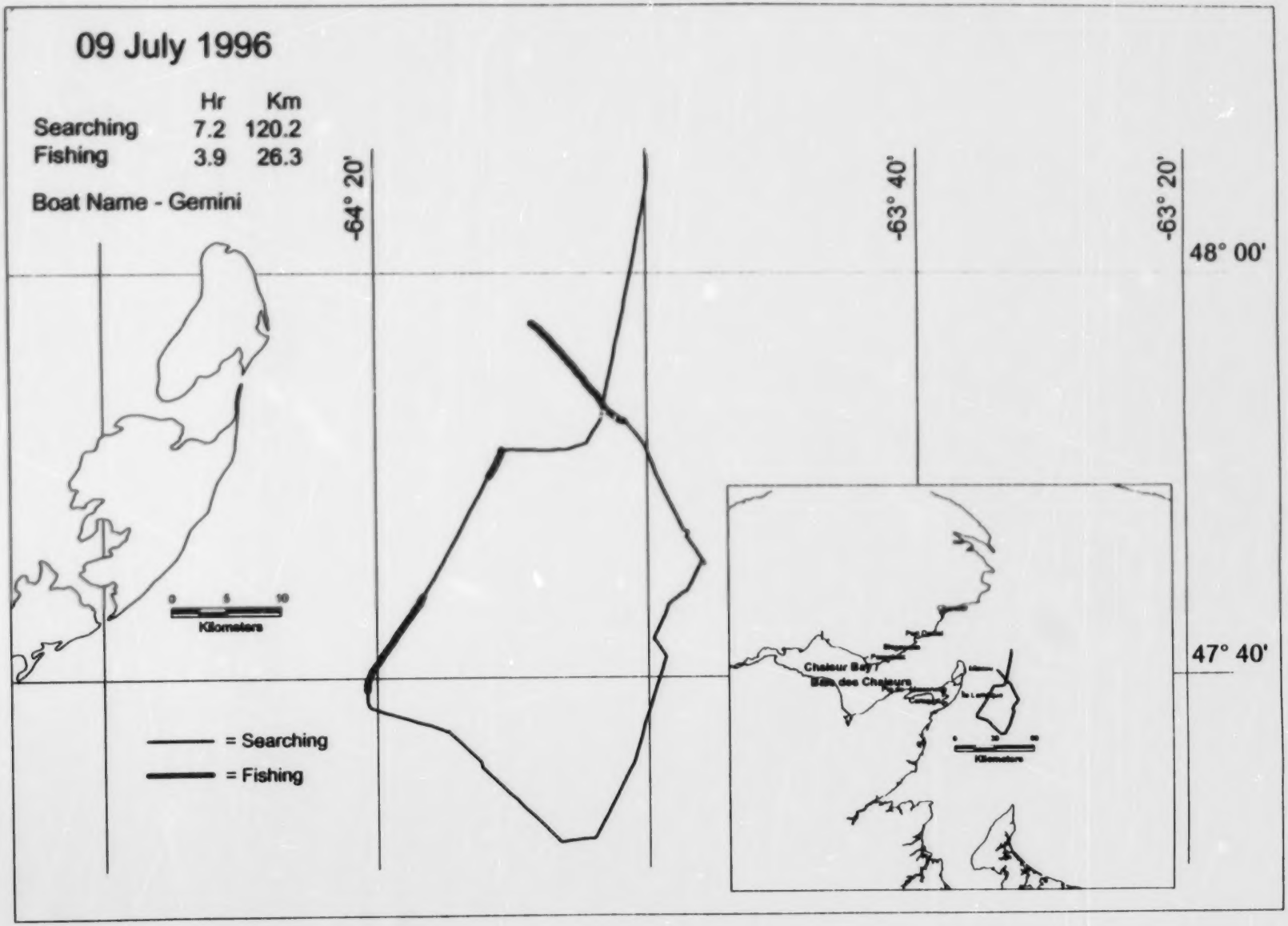

18 June 1996
Hr Km
Searching 17 128.2
Fishing 1.6 12.2
Boat Name - Gemini
= Searching
= Fishing
0 3.5 7
Kilometers
47° 30'
-64° 20'
-64° 10'
-64° 00'
Chaleur Bay /
Baie des Chaleurs

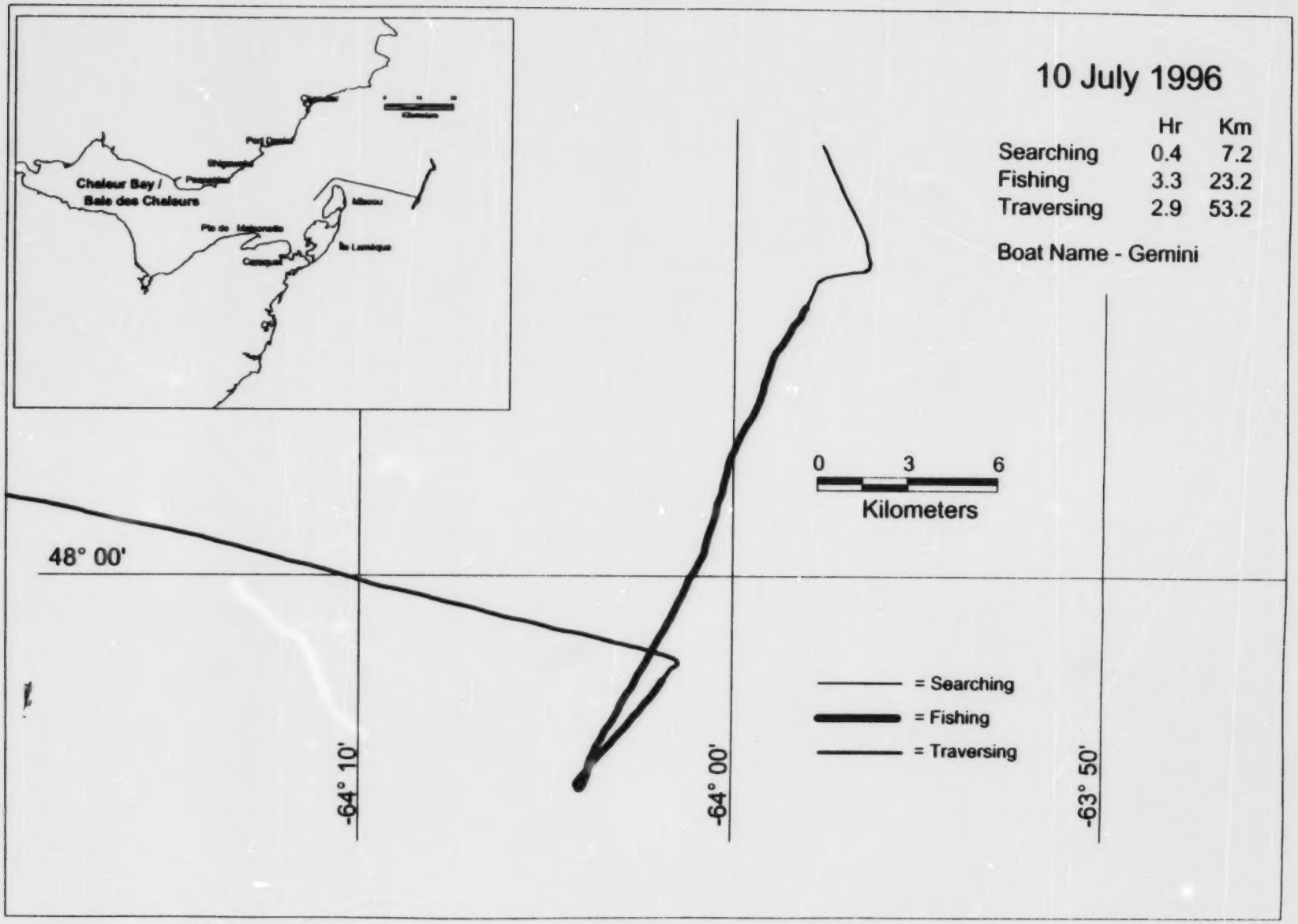

20 June 1996
Hr Km
Searching 4.1 83.1
Boat Name - Gemini
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonnette
Caraquet
Miscou
Ile Lamèque
48° 00'
47° 30'
-64° 30'
-64° 00'
= Searching
0 10 20
Kilometers

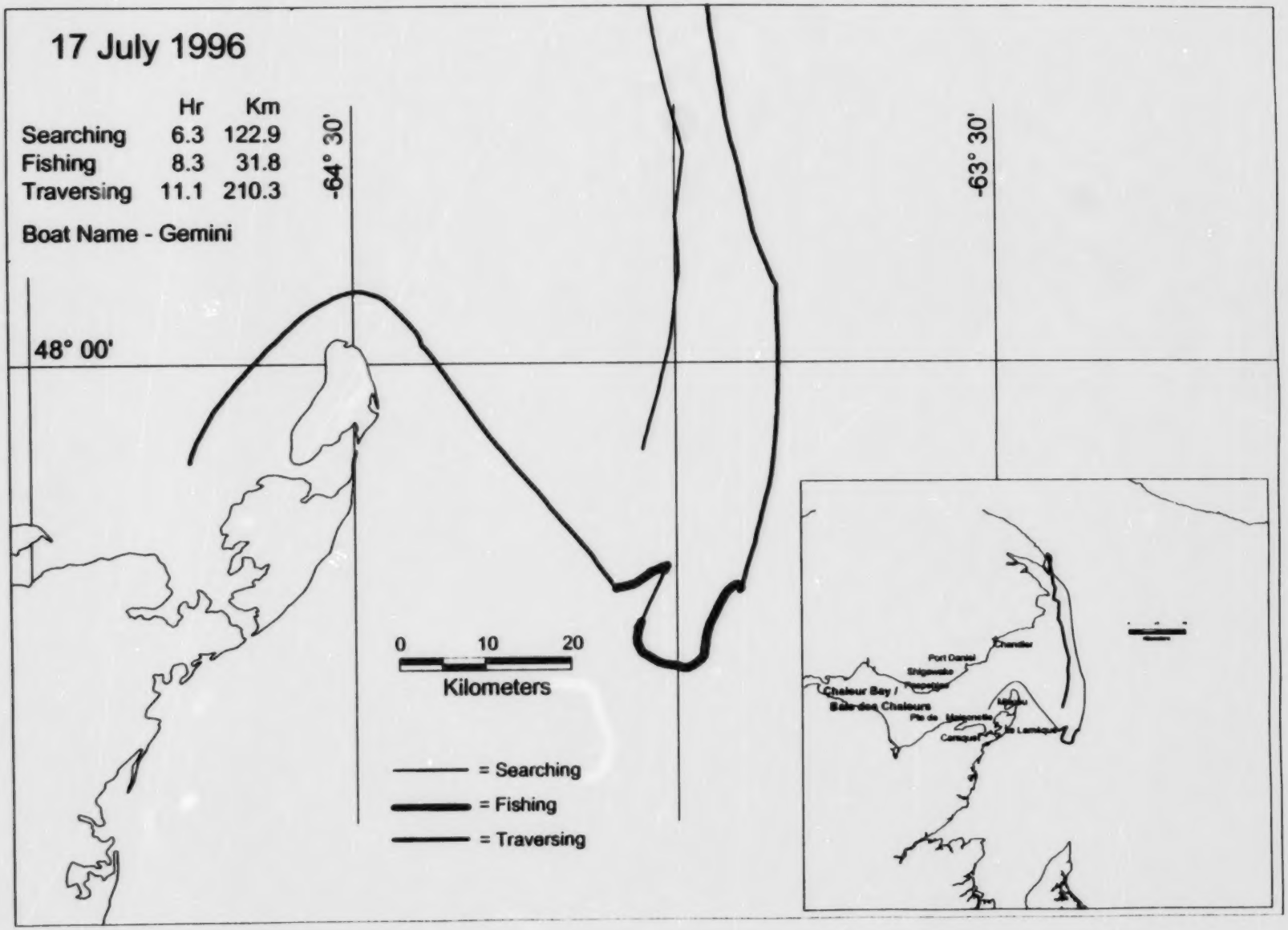

21 June 1996
Hr Km
Searching 5.2 85.1
Boat Name - Gemini
Miscou
= Searching
0 5 10
Kilometers
Île Lamèque
Caraquet
Shippegan
N.-B.
48 00'
47 45'
47 30'
64 30'
64 15'
64 00'

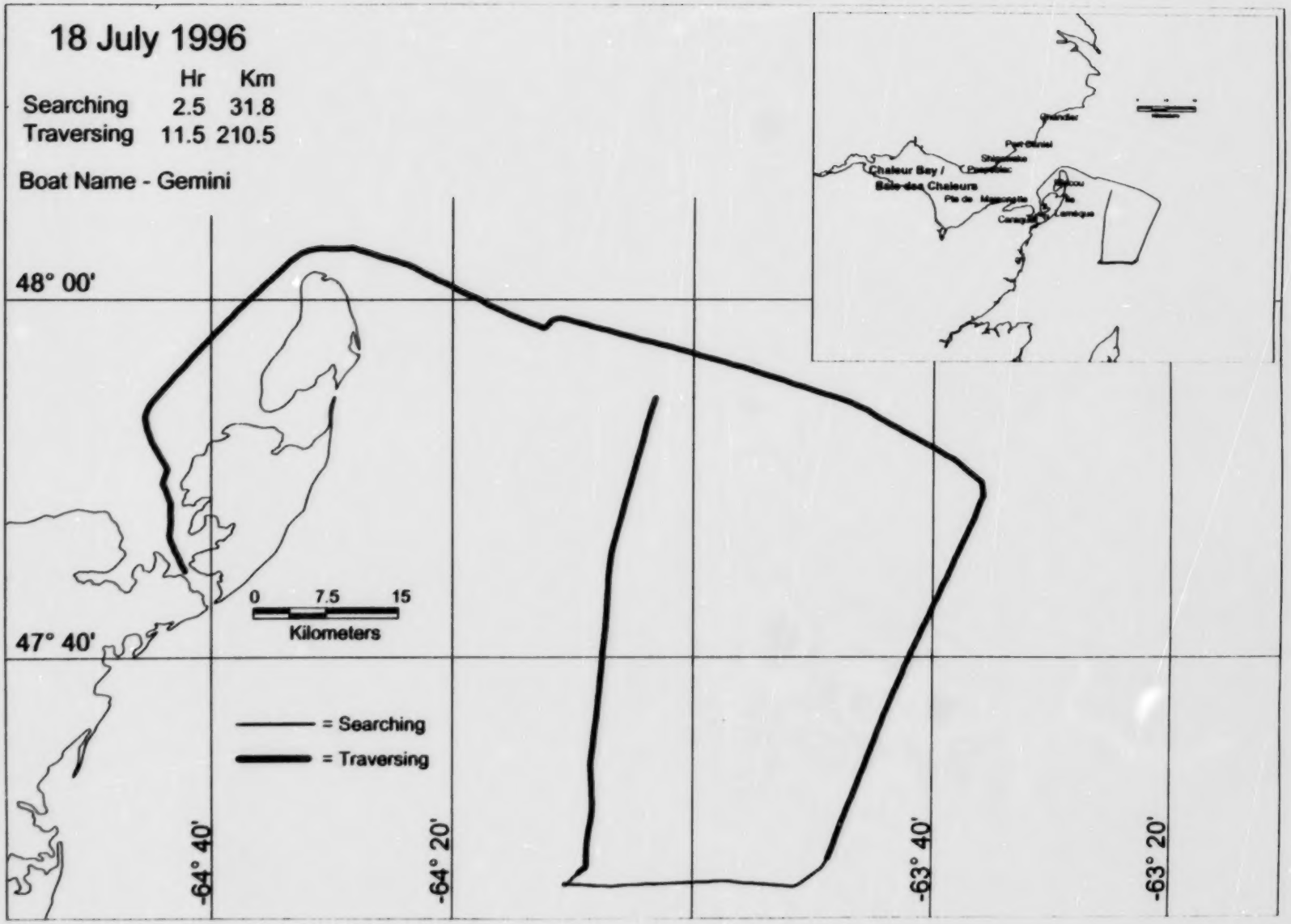

23 June 1996
Hr Km
Searching 8.5 157.6
Fishing 3.3 25.3
Traversing 2.2 91.9
Boat Name - Gemini
47° 40'
0 7.5 15
Kilometers
= Searching
= Fishing
= Traversing
-64° 20'
-64° 00'
-63° 40'
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Miscou
Pte de Maisonette
Caraquet
Île Lamèque
Kilometers

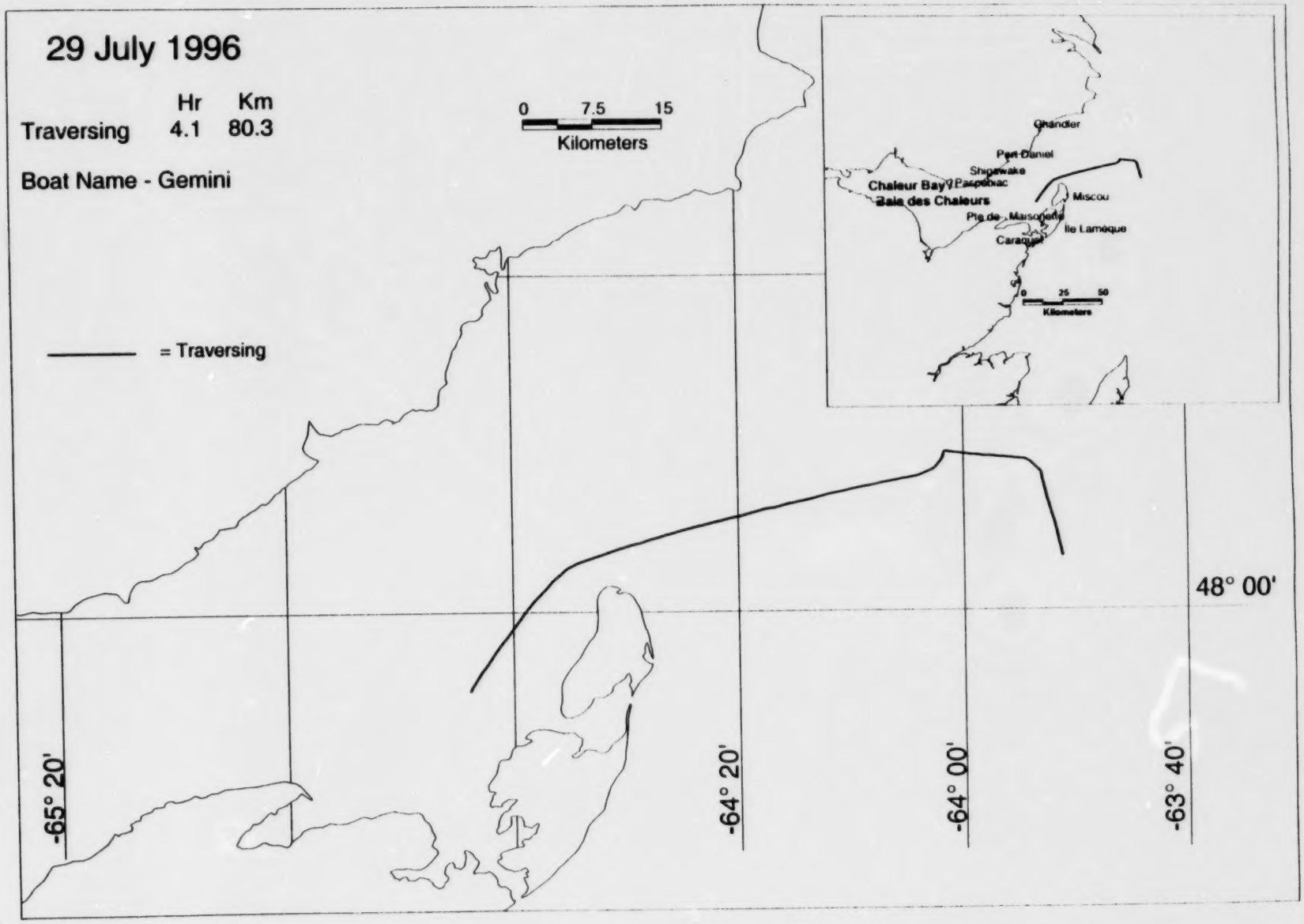

07 July 1996
Hr Km
Searching 2.9 51.9
Boat Name - Gemini
= Searching
0 4 8
Kilometers
Gaspésie (Qué.)
Chaleur Bay /
Baie des Chaleurs
N.-B.
0 20 40
Kilometers
48° 00'
-64° 40'
-64° 30'
-64° 20'
-64° 10'

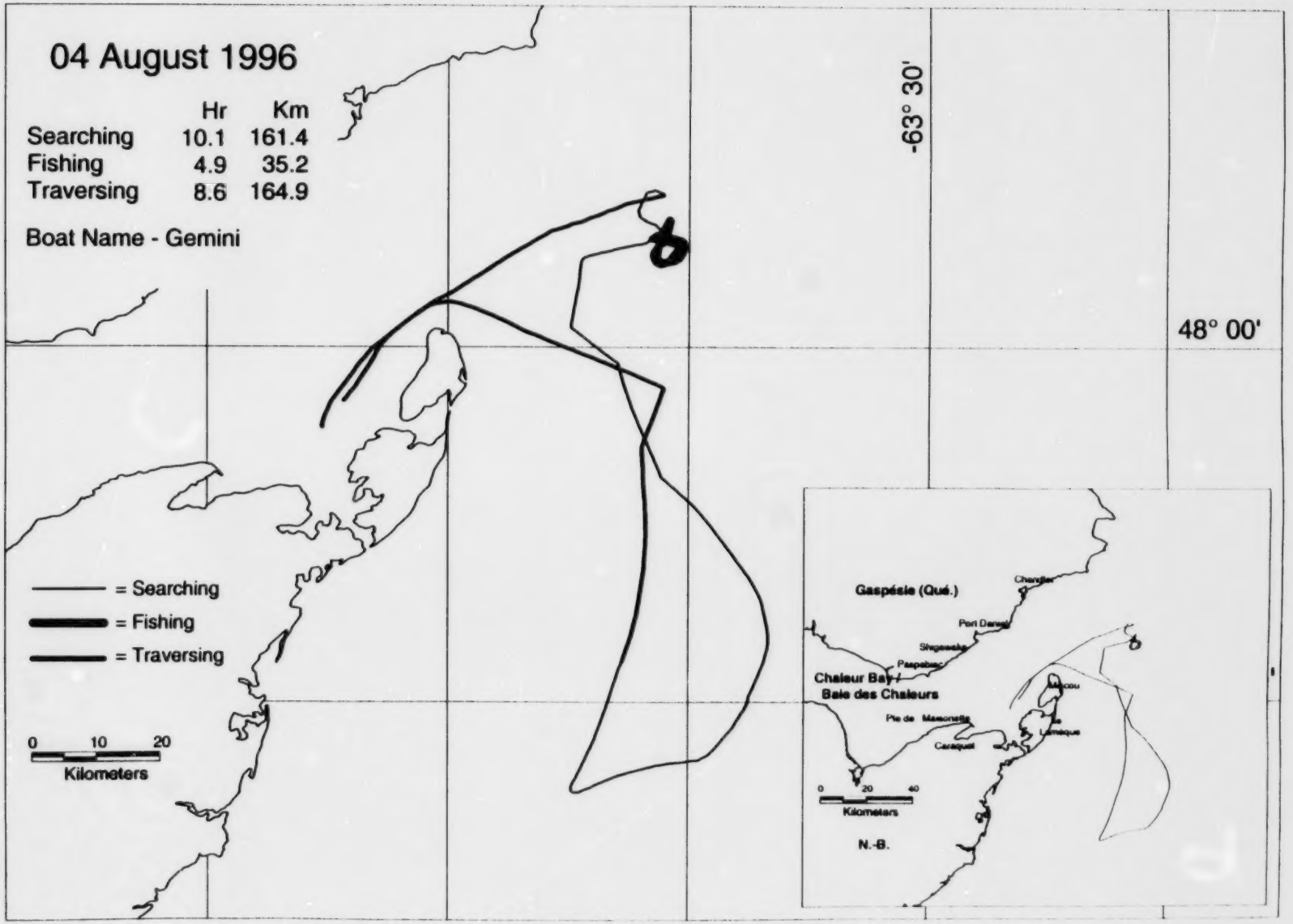

09 July 1996
Hr Km
Searching 7.2 120.2
Fishing 3.9 26.3
Boat Name - Gemini
-64° 20'
-63° 40'
-63° 20'
48° 00'
47° 40'
0 5 10
Kilometers
= Searching
= Fishing
Chaleur Bay
Baie des Chaleurs
Kilometers

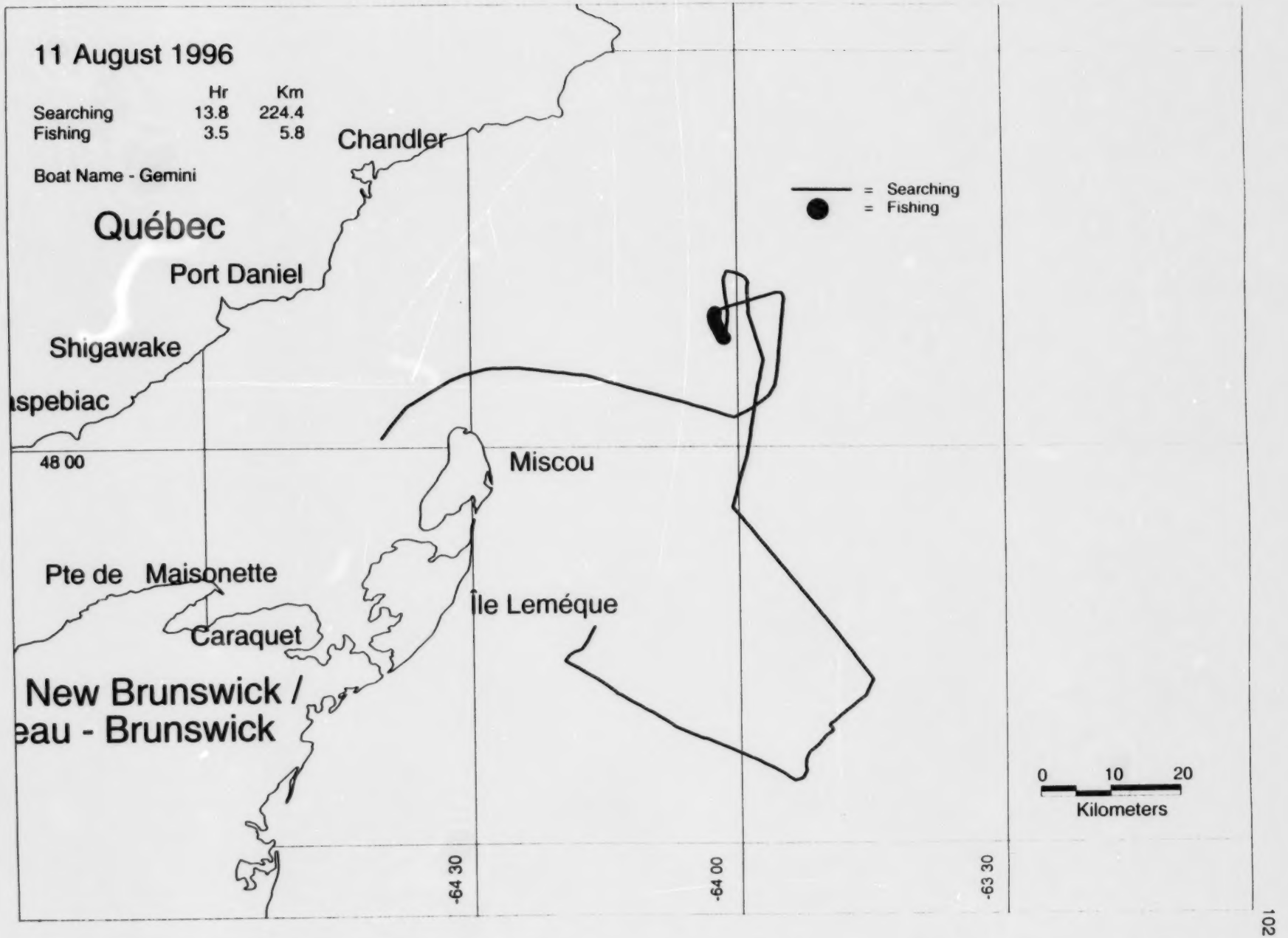

Chaleur Bay /
Baie des Chaleurs
10 July 1996
Hr Km
Searching 0.4 7.2
Fishing 3.3 23.2
Traversing 2.9 53.2
Boat Name - Gemini
0 3 6
Kilometers
48° 00'
-64° 10'
-64° 00'
-63° 50'
= Searching
= Fishing
= Traversing

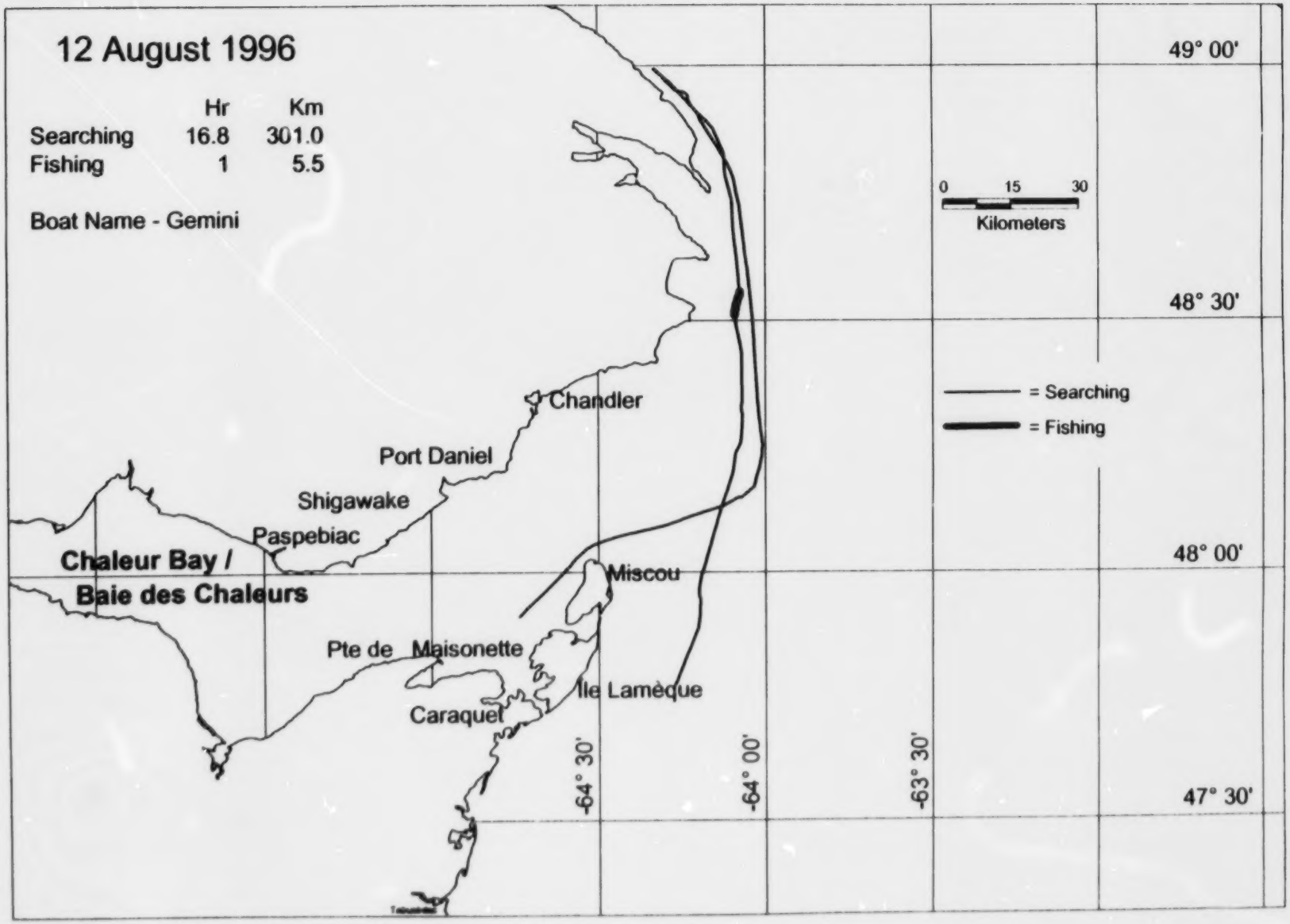

17 July 1996
Hr Km
Searching 6.3 122.9
Fishing 8.3 31.8
Traversing 11.1 210.3
Boat Name - Gemini
-64° 30'
-63° 30'
48° 00'
0 10 20
Kilometers
= Searching
= Fishing
= Traversing
Chandler
Port Daniel
Shigawake
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonnette
Carraquet
Le Lamèque

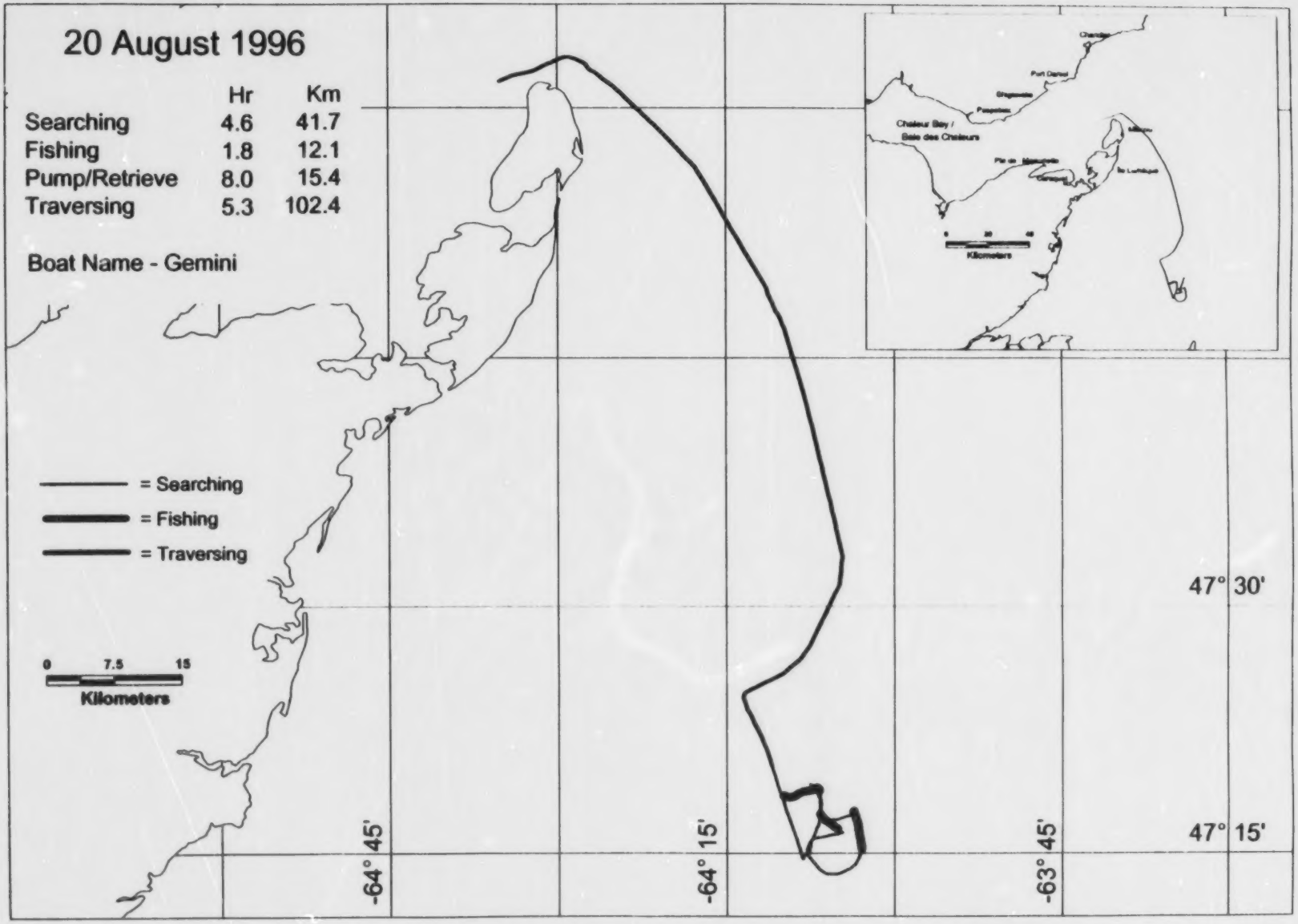

18 July 1996
Hr Km
Searching 2.5 31.8
Traversing 11.5 210.5
Boat Name - Gemini
48° 00'
47° 40'
0 7.5 15
Kilometers
= Searching
= Traversing
-64° 40'
-64° 20'
-63° 40'
-63° 20'
Chaleur Bay /
Baie des Chaleurs

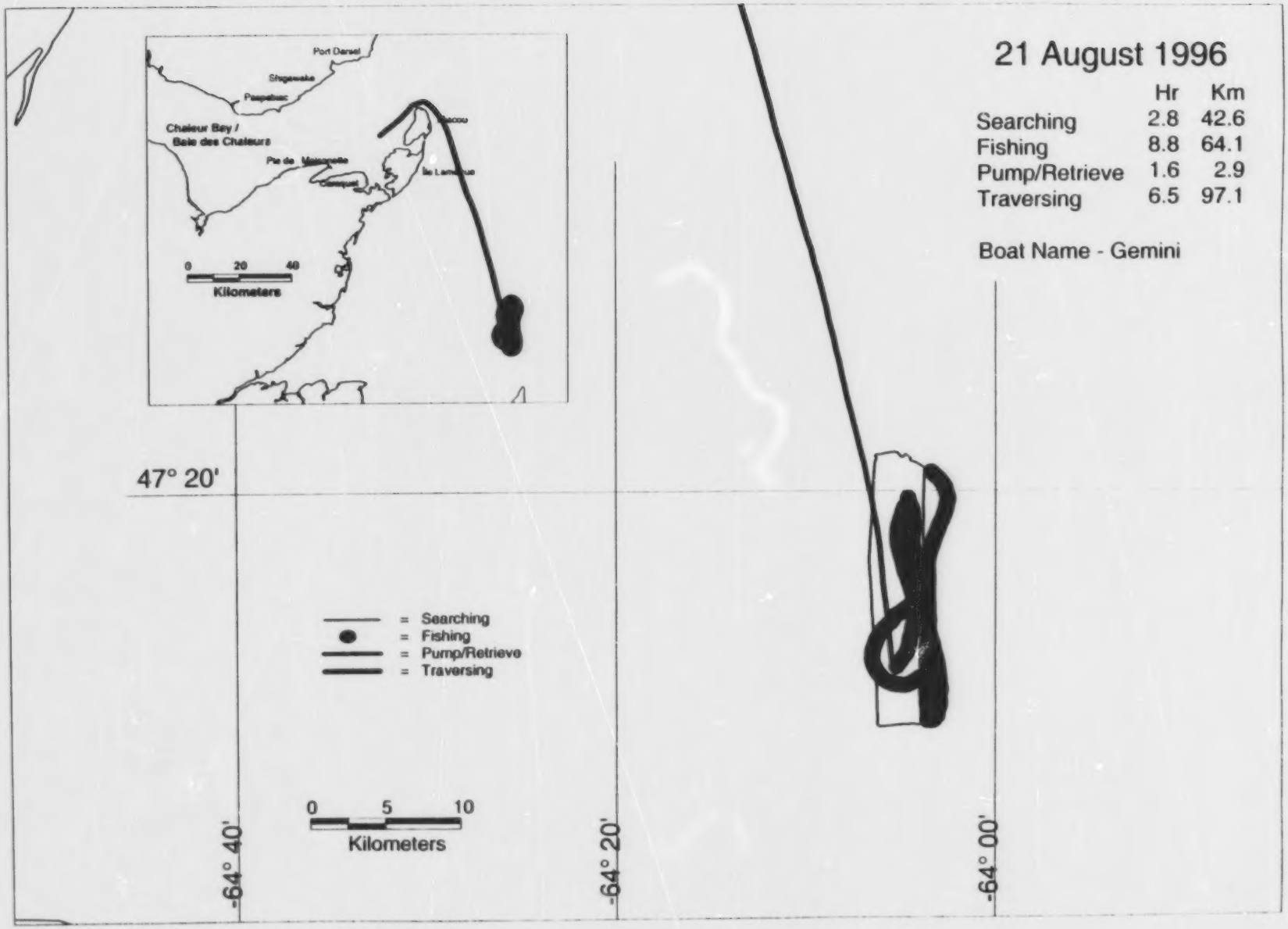

29 July 1996
Hr Km
Traversing 4.1 80.3
Boat Name - Gemini
= Traversing
0 7.5 15
Kilometers
48° 00'
-65° 20'
-64° 20'
-64° 00'
-63° 40'
Chandler
Port Daniel
Shipswake
Chaleur Bay / Paspebiac
Baie des Chaleurs
Miscou
Pte de Maisonette
Ile Lamèque
Caraquet
0 25 50
Kilometers

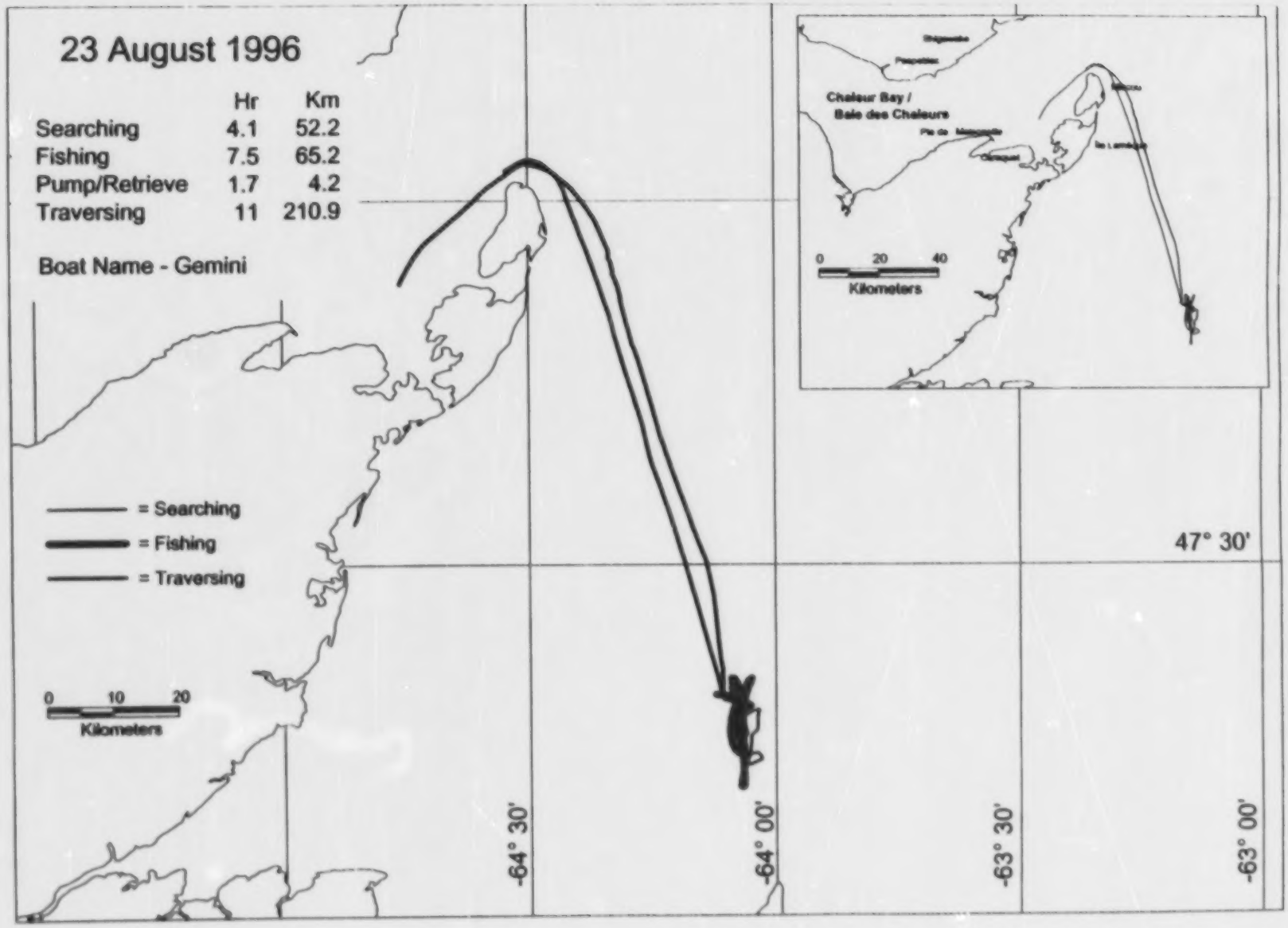

04 August 1996
Hr Km
Searching 10.1 161.4
Fishing 4.9 35.2
Traversing 8.6 164.9
Boat Name - Gemini
-63° 30'
48° 00'
= Searching
= Fishing
= Traversing
0 10 20
Kilometers
Gaspésie (Qué.)
Chaleur Bay /
Baie des Chaleurs
0 20 40
Kilometers
N.-B.

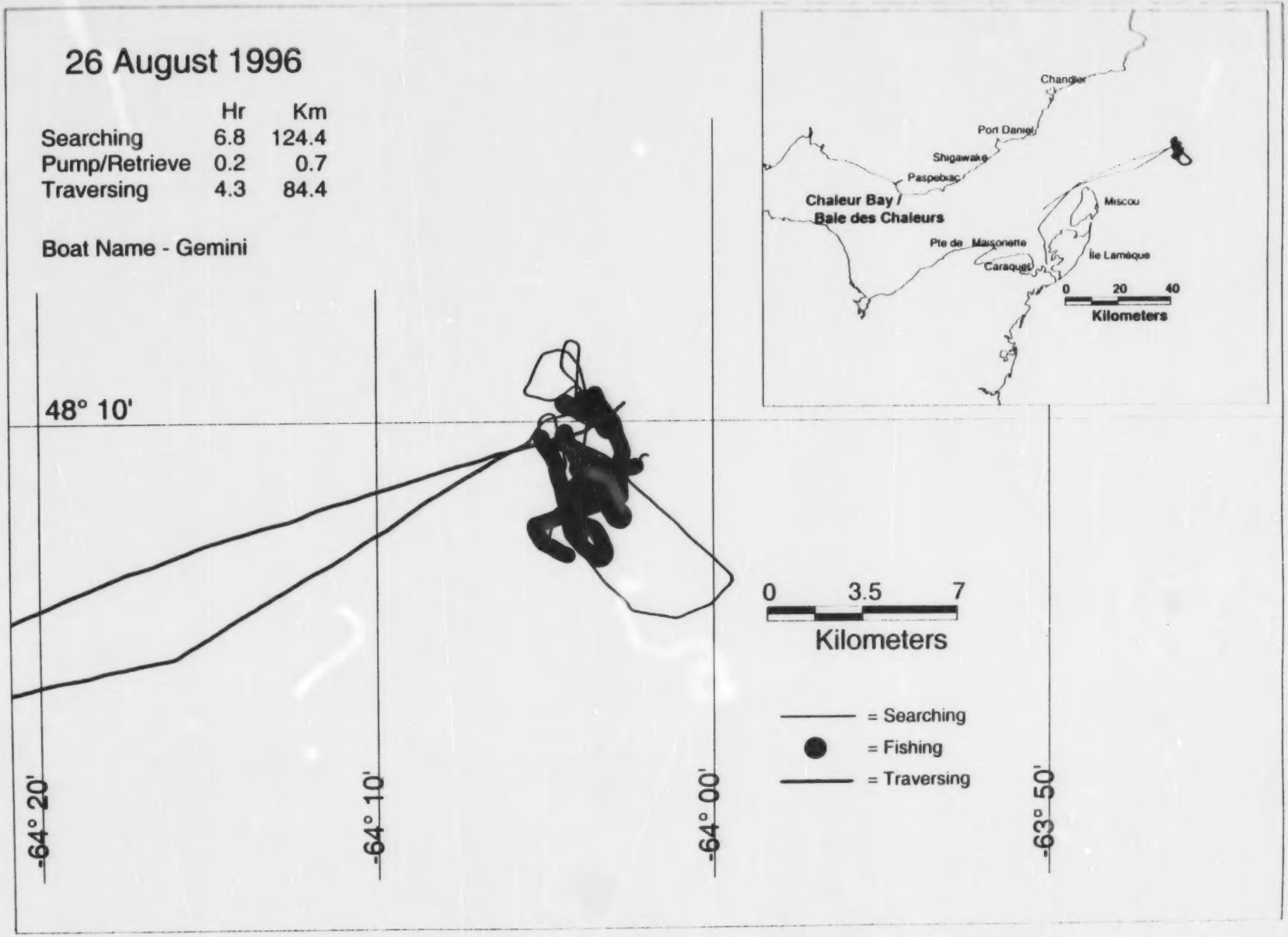

11 August 1996
Hr Km
Searching 13.8 224.4
Fishing 3.5 5.8
Boat Name - Gemini
= Searching
= Fishing
Québec
Chandler
Port Daniel
Shigawake
spebiac
48 00
Miscou
Pte de Maisonette
Caraquet
Île Leméque
New Brunswick /
eau - Brunswick
0 10 20
Kilometers
-64 30
-64 00
-63 30
102


12 August 1996
Hr Km
Searching 16.8 301.0
Fishing 1 5.5
Boat Name - Gemini
0 15 30
Kilometers
= Searching
= Fishing
49° 00'
48° 30'
48° 00'
47° 30'
-64° 30'
-64° 00'
-63° 30'
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Miscou
Pte de Maisonette
Ile Lamèque
Caraquet


20 August 1996
Hr Km
Searching 4.6 41.7
Fishing 1.8 12.1
Pump/Retrieve 8.0 15.4
Traversing 5.3 102.4
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 7.5 15
Kilometers
47° 30'
47° 15'
-64° 45'
-64° 15'
-63° 45'
Chaleur Bay / Baie des Chaleurs
Kilometers


21 August 1996
Hr Km
Searching 2.8 42.6
Fishing 8.8 64.1
Pump/Retrieve 1.6 2.9
Traversing 6.5 97.1
Boat Name - Gemini
Port Daniel
Chaleur Bay /
Baie des Chaleurs
0 20 40
Kilometers
47° 20'
= Searching
= Fishing
= Pump/Retrieve
= Traversing
0 5 10
Kilometers
-64° 40'
-64° 20'
-64° 00'

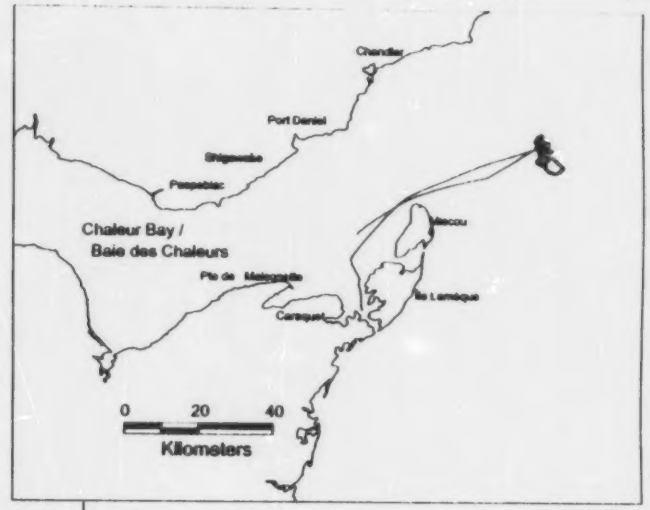

23 August 1996
Hr Km
Searching 4.1 52.2
Fishing 7.5 65.2
Pump/Retrieve 1.7 4.2
Traversing 11 210.9
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 10 20
Kilometers
Chaleur Bay /
Baie des Chaleurs
0 20 40
Kilometers
47° 30'
-64° 30'
-64° 00'
-63° 30'
-63° 00'


26 August 1996
Hr Km
Searching 6.8 124.4
Pump/Retrieve 0.2 0.7
Traversing 4.3 84.4
Boat Name - Gemini
48° 10'
-64° 20'
-64° 10'
-64° 00'
-63° 50'
0 3.5 7
Kilometers
= Searching
= Fishing
= Traversing
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay / Baie des Chaleurs
Pte de Maisonnette
Caraquet
Miscou
Île Lamèque
0 20 40
Kilometers

31 August 1996

	Hr	Km
Searching	3.9	46.9
Fishing	4.9	28.7
Pump/Retrieve	2.4	5.4
Traversing	7.2	131.1
Other	0.2	0.4

Boat Name - Gemini



48° 10'

-64° 10'

-64° 00'

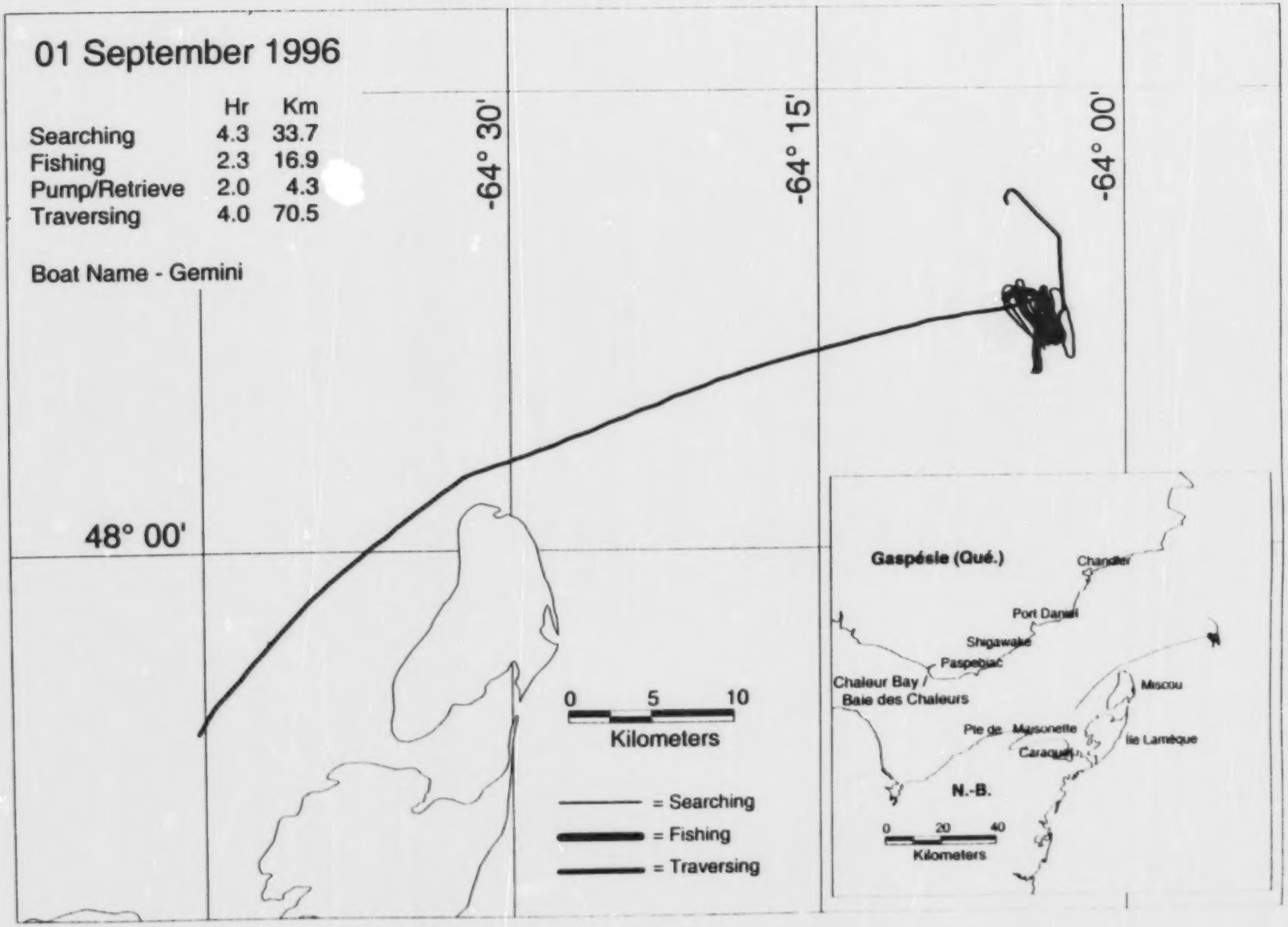
= Searching

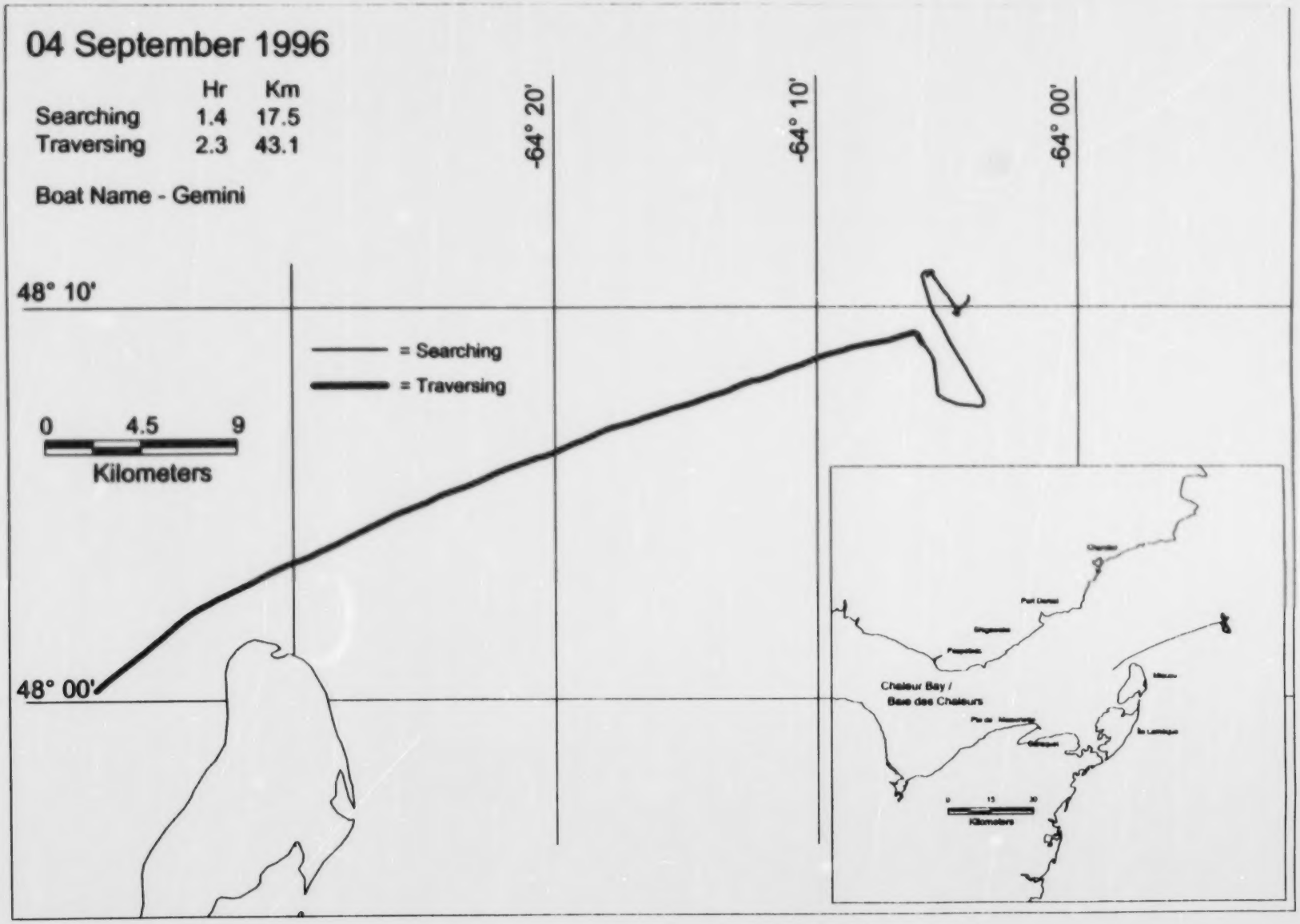
= Fishing

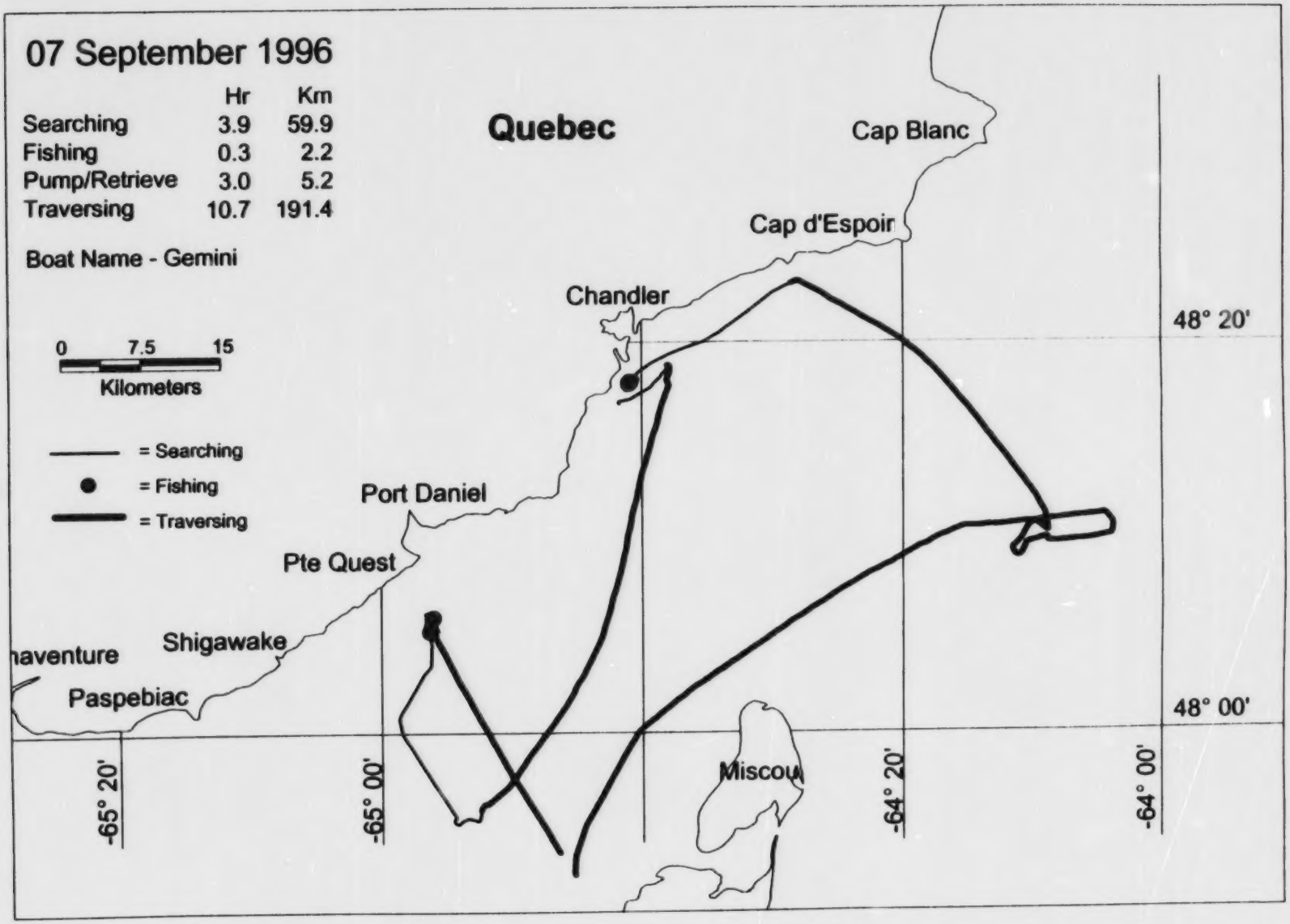
= Traversing

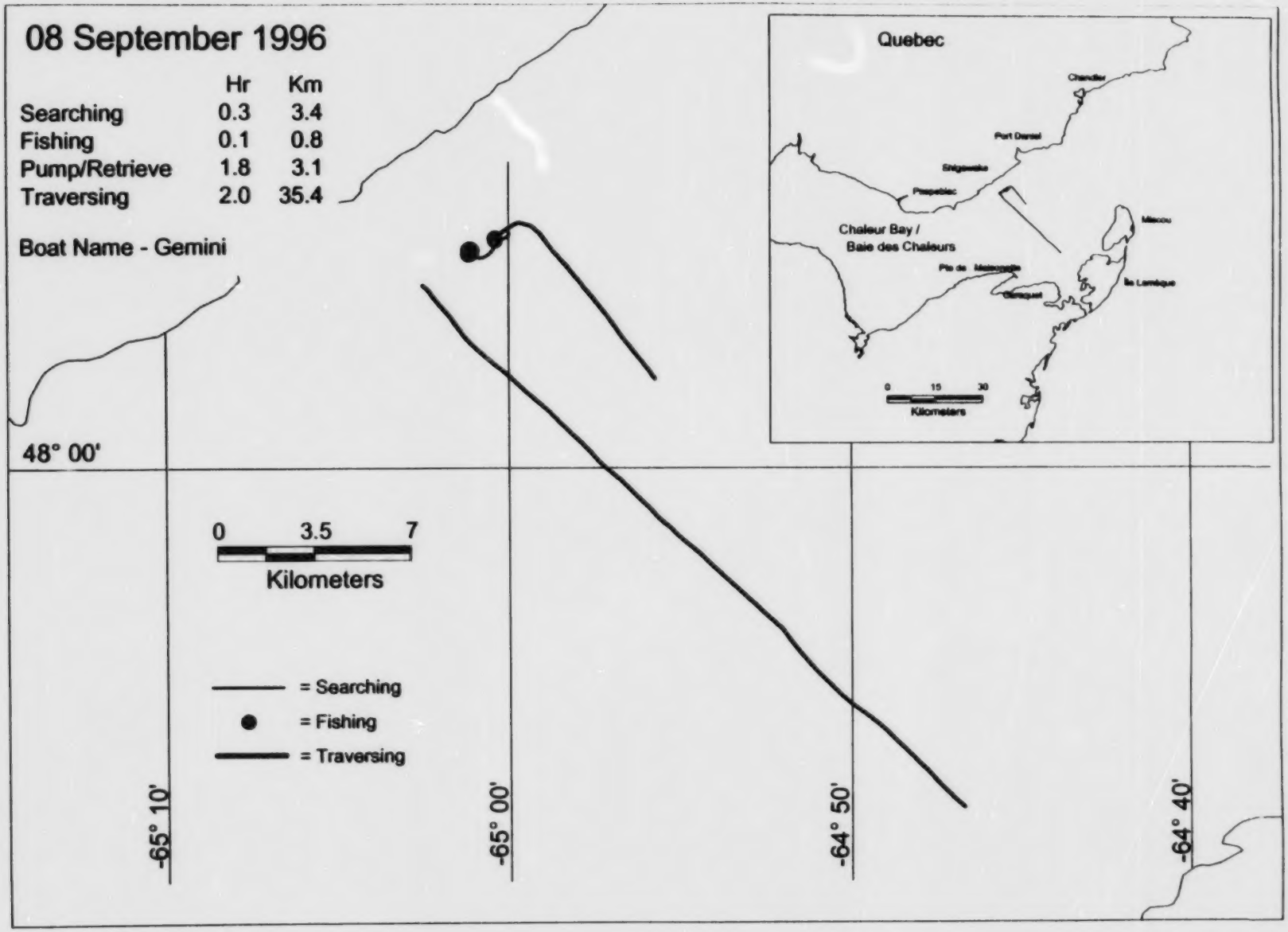
0 2.5 5

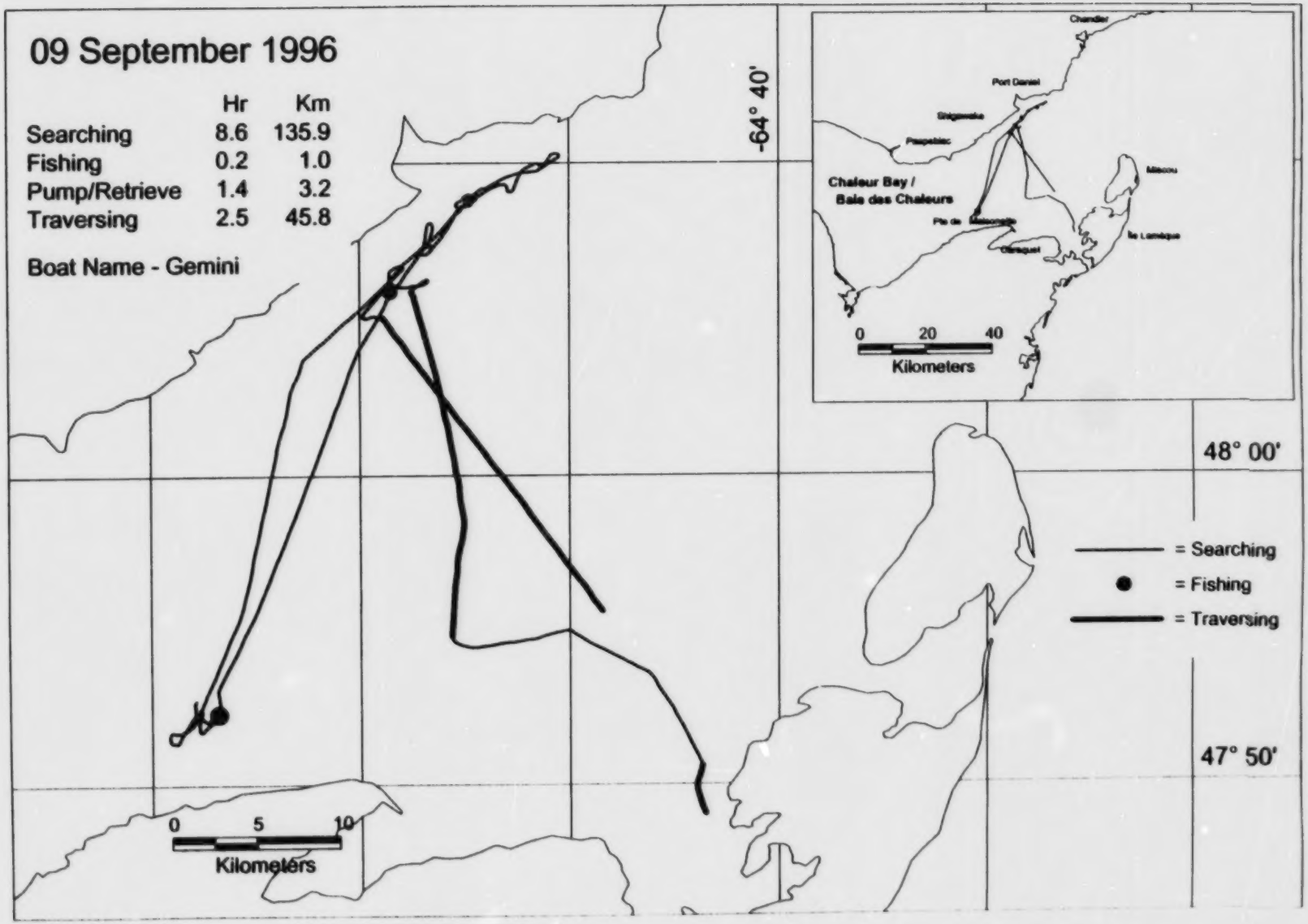
Kilometers

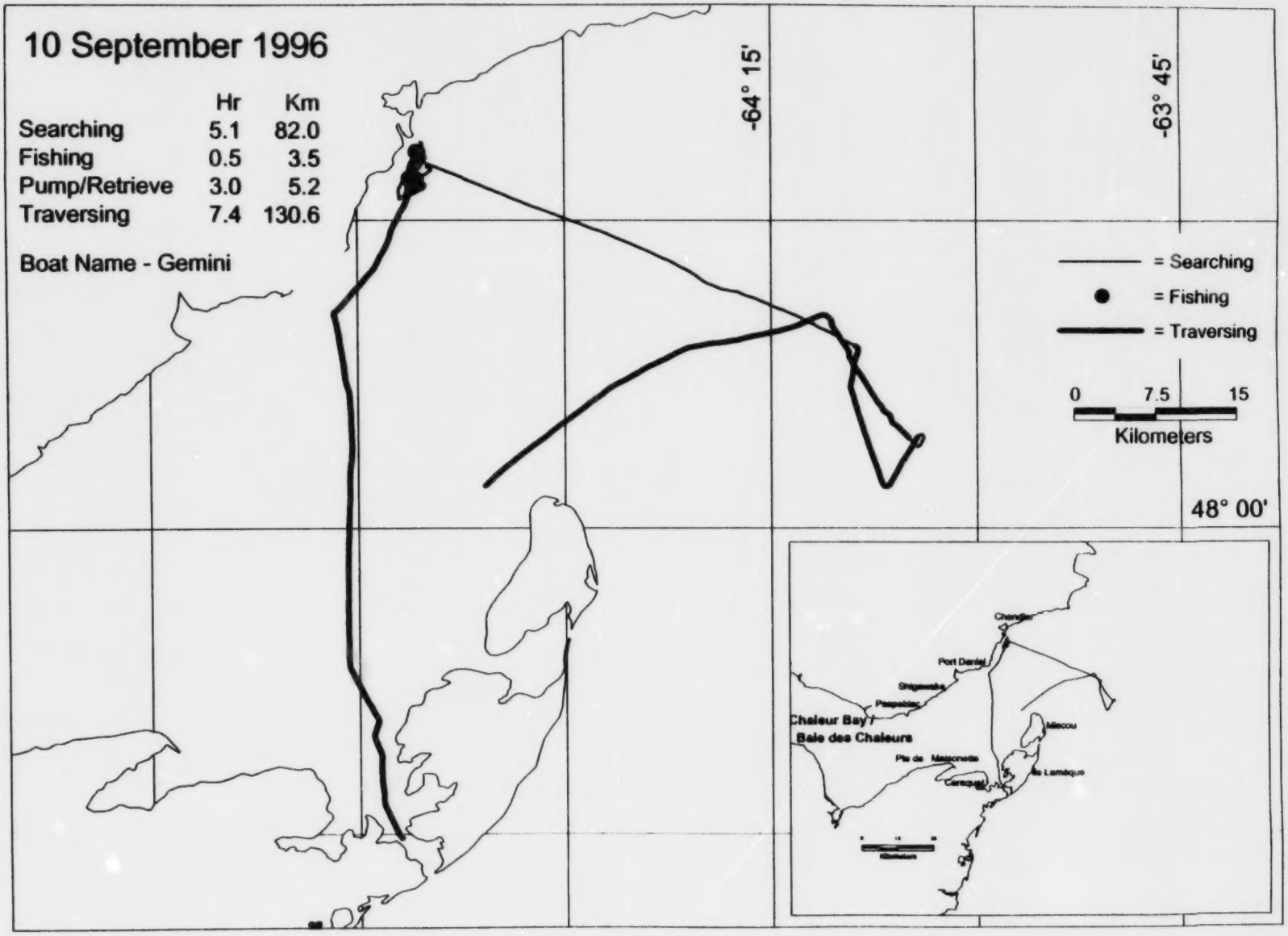

01 September 1996
Hr Km
Searching 4.3 33.7
Fishing 2.3 16.9
Pump/Retrieve 2.0 4.3
Traversing 4.0 70.5
Boat Name - Gemini
-64° 30'
-64° 15'
-64° 00'
48° 00'
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
Gaspésie (Qué.)
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay / Baie des Chaleurs
Miscou
Pte de Maisonette
Caraquet
Ile Lamèque
N.-B.
0 20 40
Kilometers

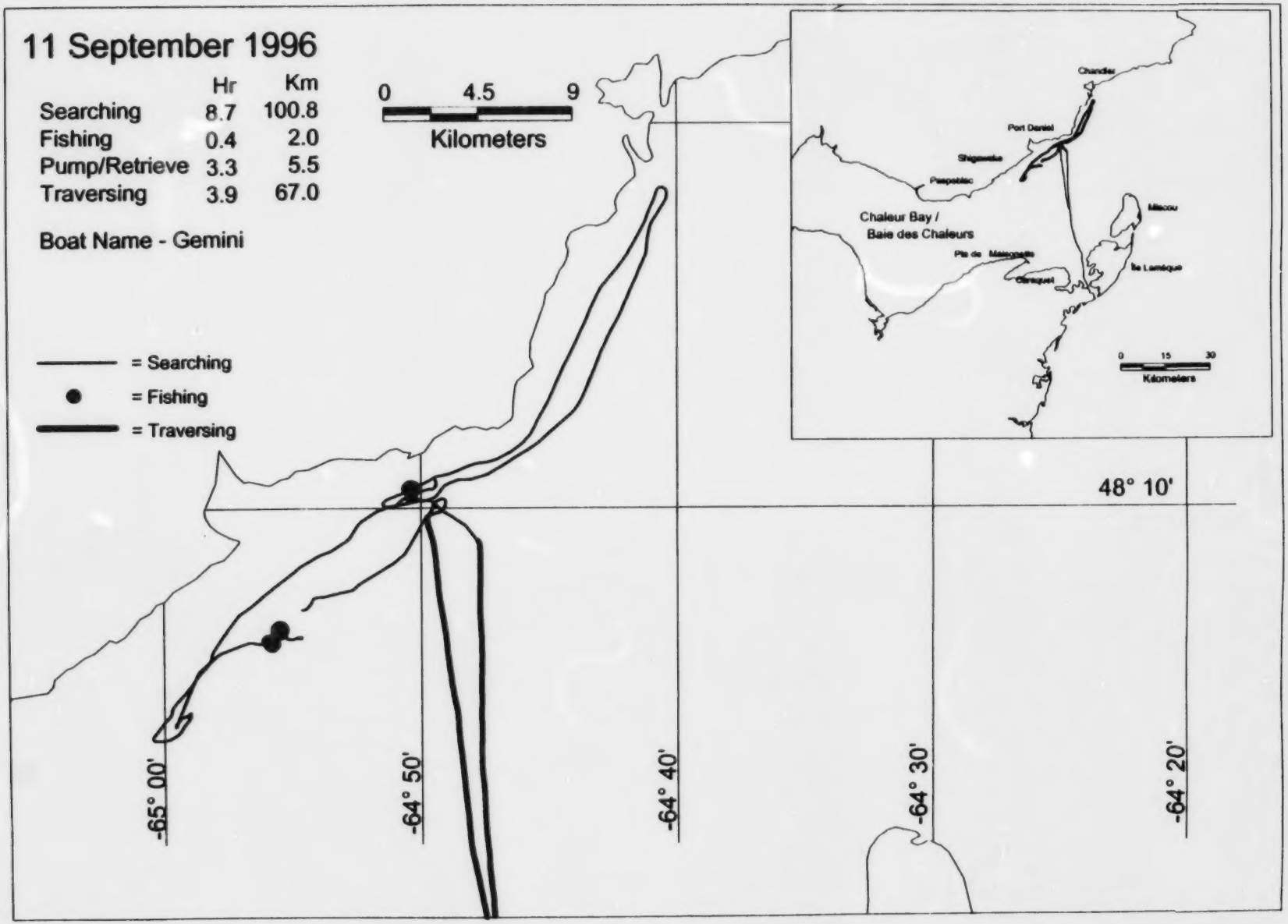

04 September 1996
Hr Km
Searching 1.4 17.5
Traversing 2.3 43.1
Boat Name - Gemini
-64° 20'
-64° 10'
-64° 00'
48° 10'
48° 00'
= Searching
= Traversing
0 4.5 9
Kilometers
Chaleur Bay /
Baie des Chaleurs

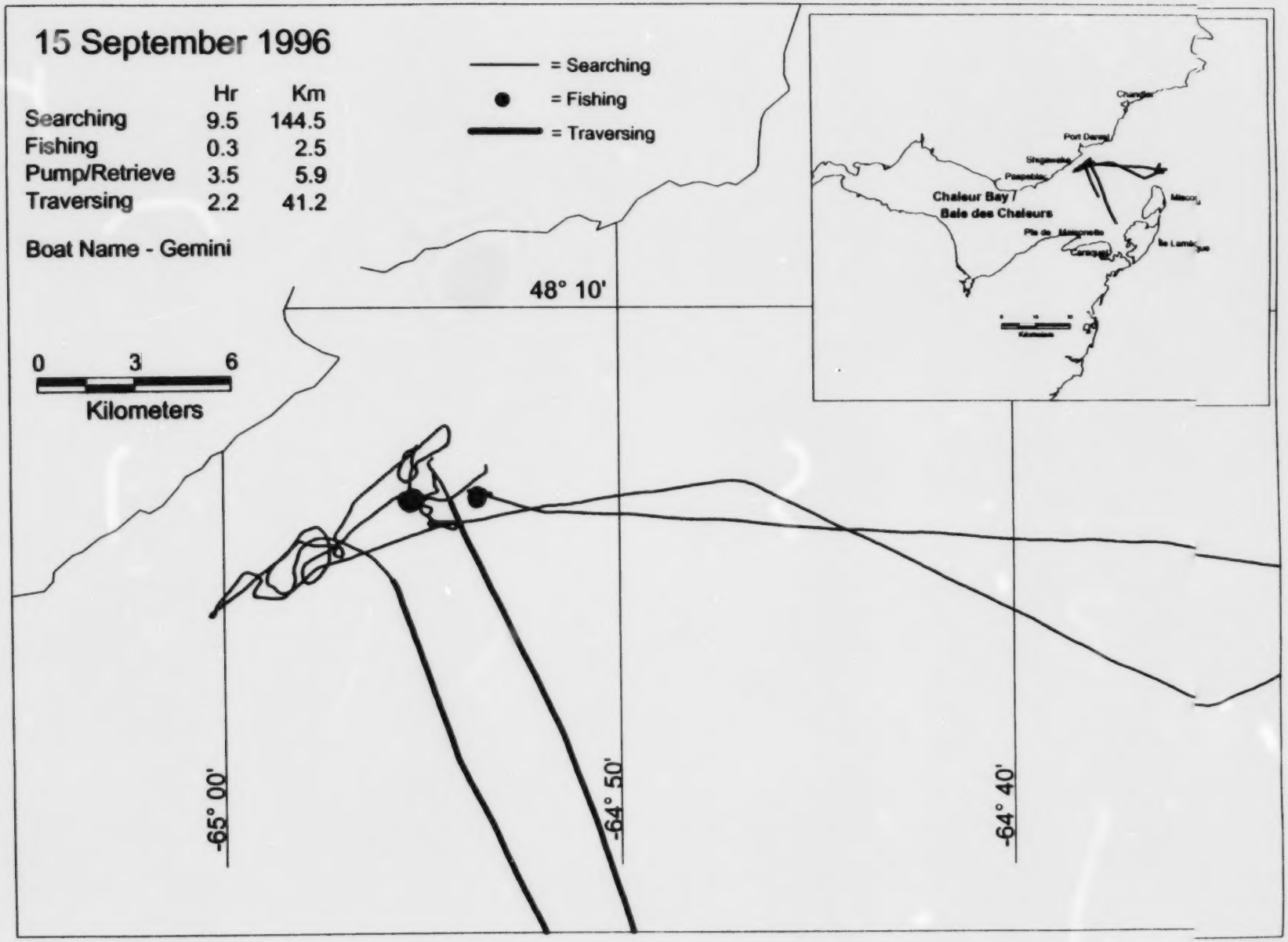

07 September 1996
Hr Km
Searching 3.9 59.9
Fishing 0.3 2.2
Pump/Retrieve 3.0 5.2
Traversing 10.7 191.4
Boat Name - Gemini
Quebec
Cap Blanc
Cap d'Espoir
Chandler
48° 20'
0 7.5 15
Kilometers
= Searching
= Fishing
= Traversing
Port Daniel
Pte Quest
Shigawake
Paspebiac
48° 00'
-65° 20'
-65° 00'
-64° 20'
-64° 00'

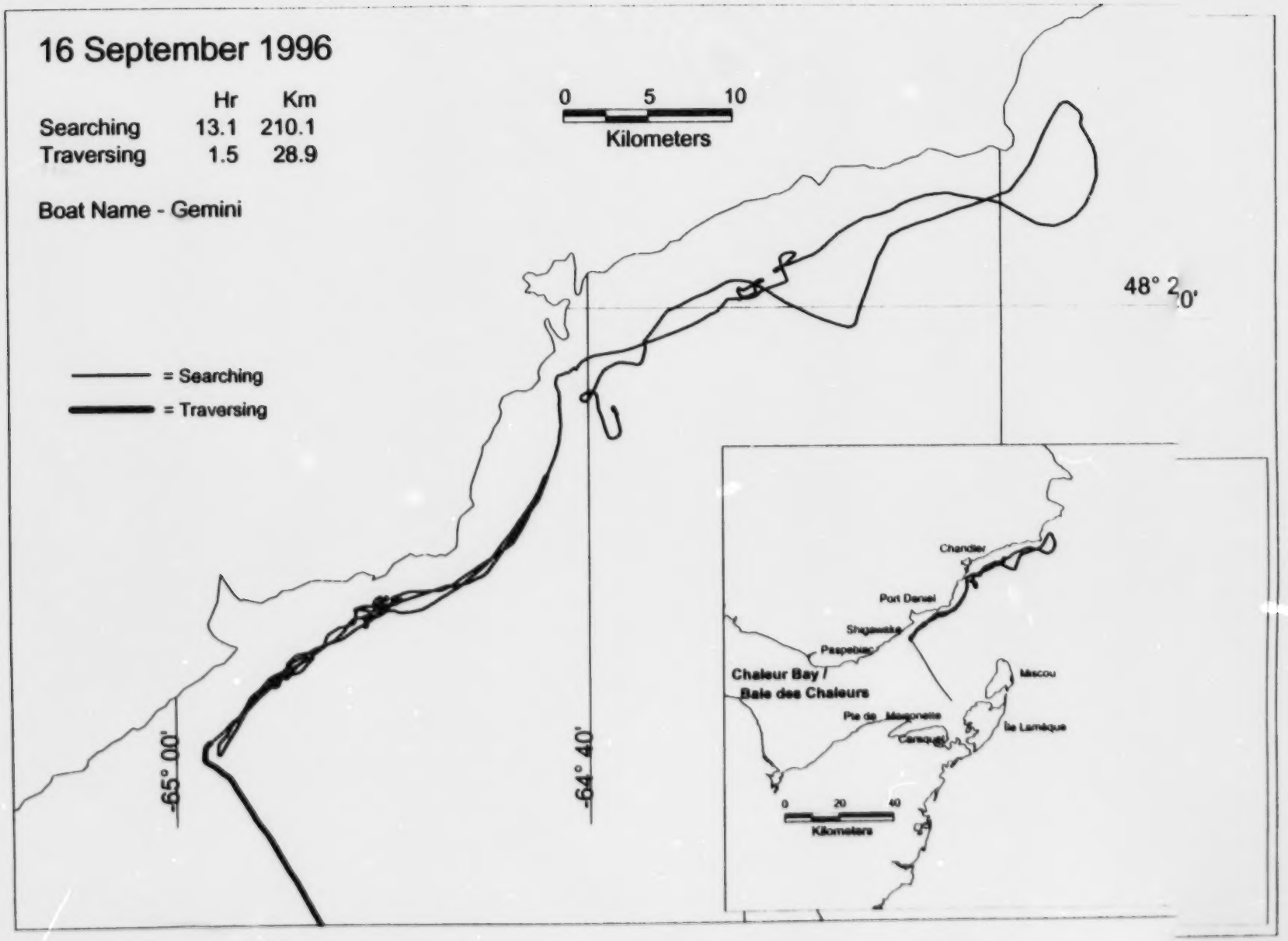

08 September 1996
Hr Km
Searching 0.3 3.4
Fishing 0.1 0.8
Pump/Retrieve 1.8 3.1
Traversing 2.0 35.4
Boat Name - Gemini
48° 00'
0 3.5 7
Kilometers
= Searching
= Fishing
= Traversing
-65° 10'
-65° 00'
-64° 50'
-64° 40'
Quebec
Chaleur Bay /
Baie des Chaleurs
0 15 30
Kilometers

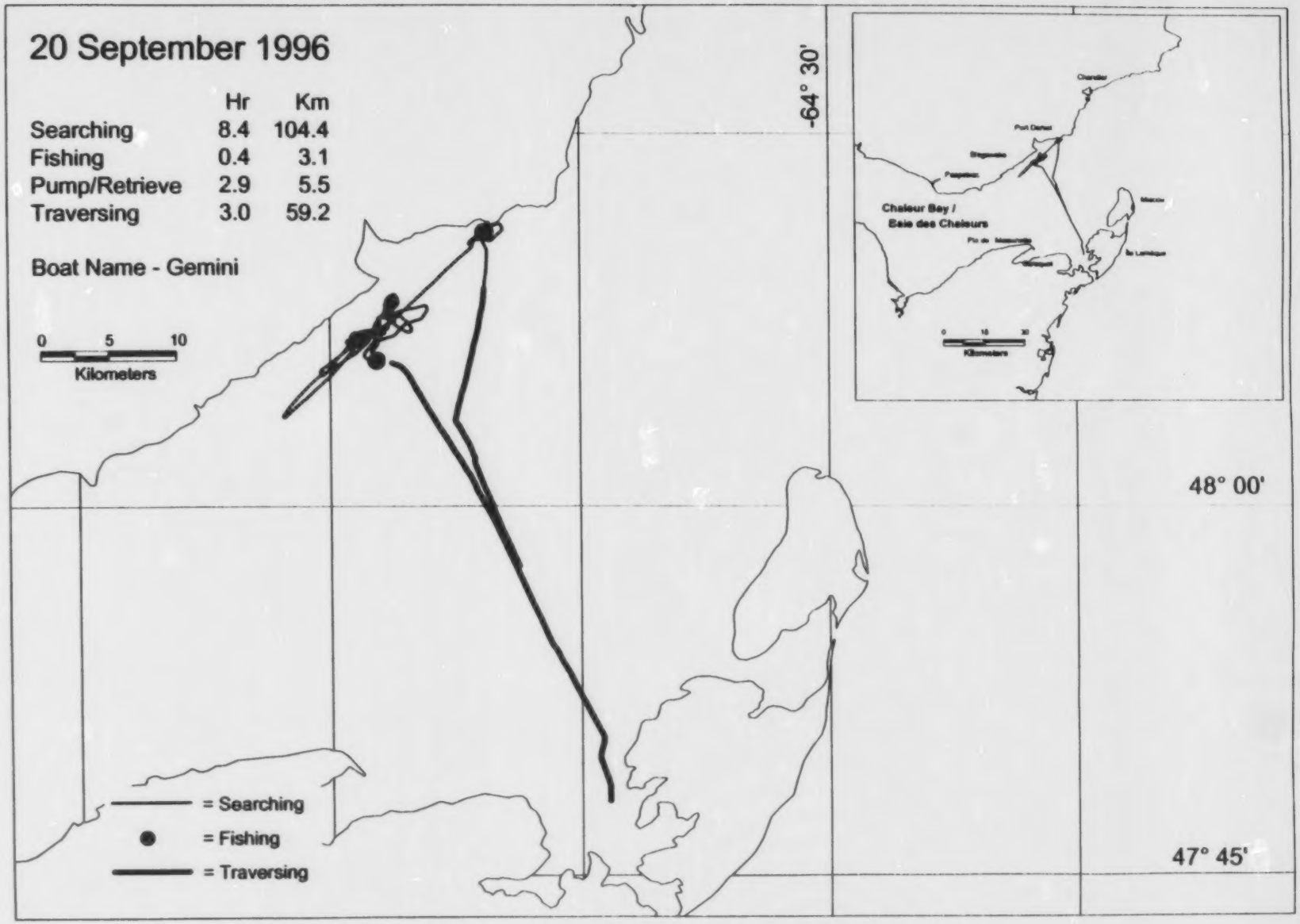

09 September 1996
Hr Km
Searching 8.6 135.9
Fishing 0.2 1.0
Pump/Retrieve 1.4 3.2
Traversing 2.5 45.8
Boat Name - Gemini
-64° 40'
48° 00'
47° 50'
0 5 10
Kilometers
Chaleur Bay / Baie des Chaleurs
0 20 40
Kilometers
= Searching
= Fishing
= Traversing

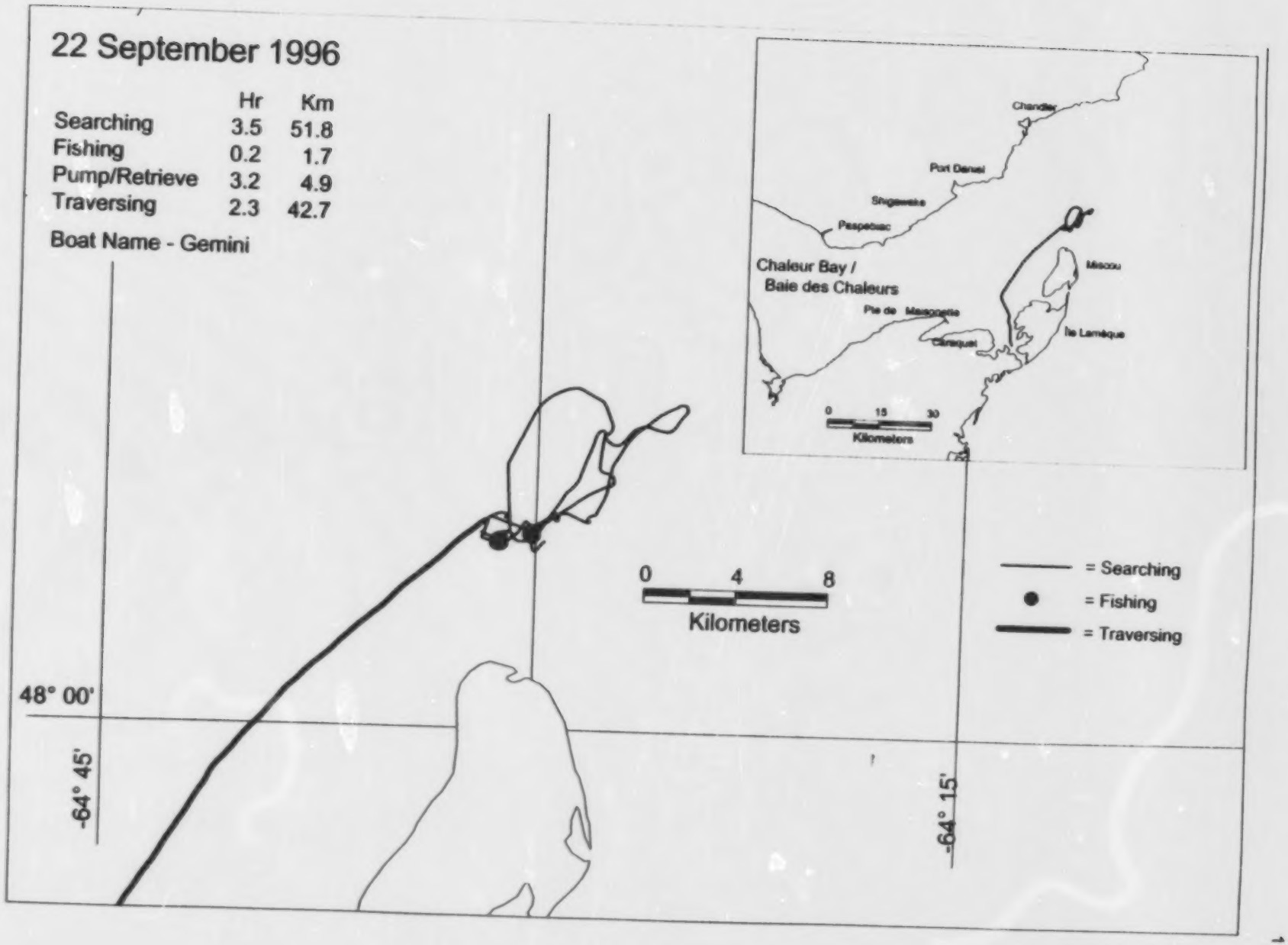

10 September 1996
Hr Km
Searching 5.1 82.0
Fishing 0.5 3.5
Pump/Retrieve 3.0 5.2
Traversing 7.4 130.6
Boat Name - Gemini
-64° 15'
-63° 45'
48° 00'
= Searching
= Fishing
= Traversing
0 7.5 15
Kilometers
Chaleur Bay /
Baie des Chaleurs

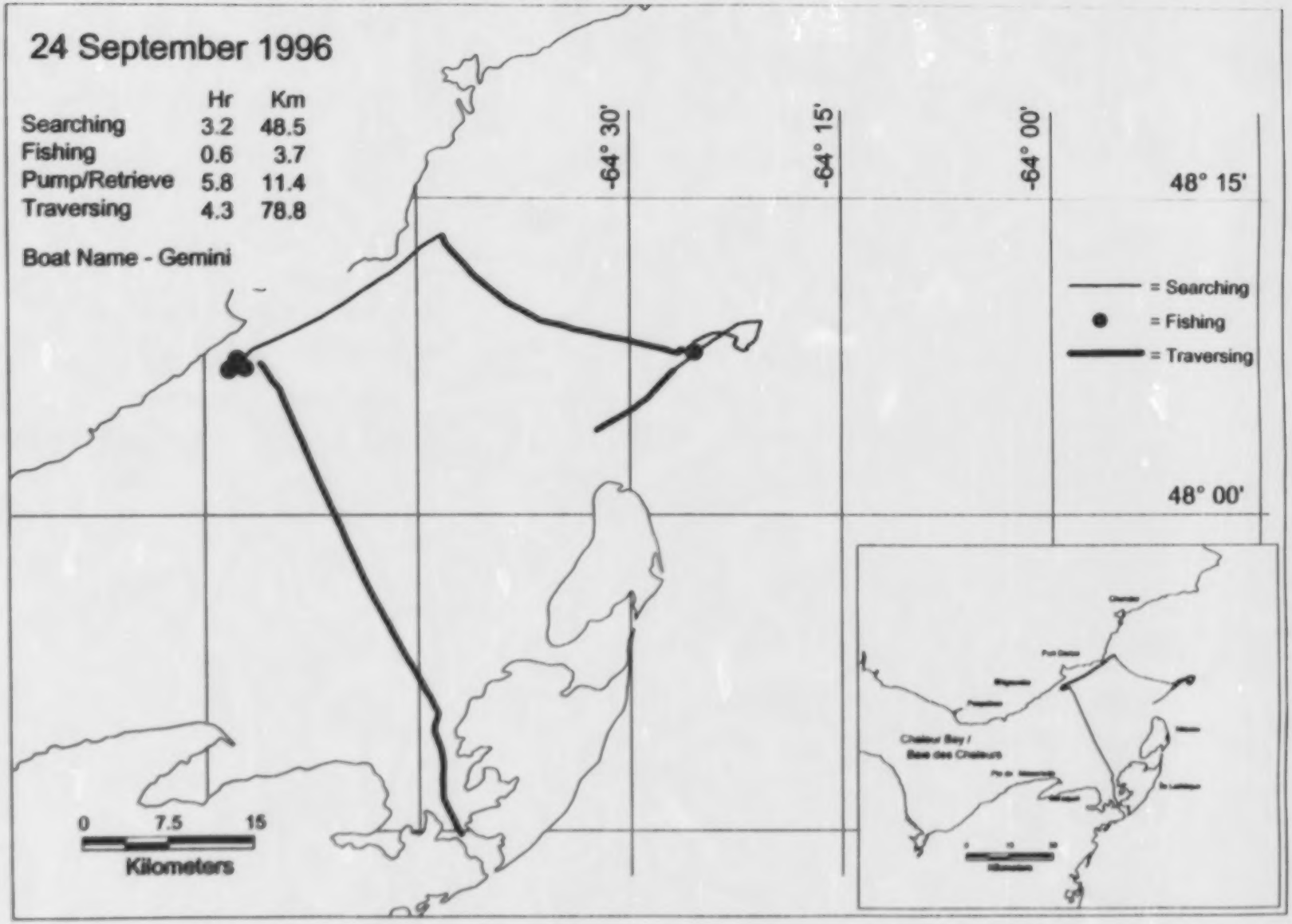

11 September 1996
Hr Km
Searching 8.7 100.8
Fishing 0.4 2.0
Pump/Retrieve 3.3 5.5
Traversing 3.9 67.0
Boat Name - Gemini
0 4.5 9
Kilometers
= Searching
= Fishing
= Traversing
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Miscou
Ile Lamèque
0 15 30
Kilometers
48° 10'
-65° 00'
-64° 50'
-64° 40'
-64° 30'
-64° 20'

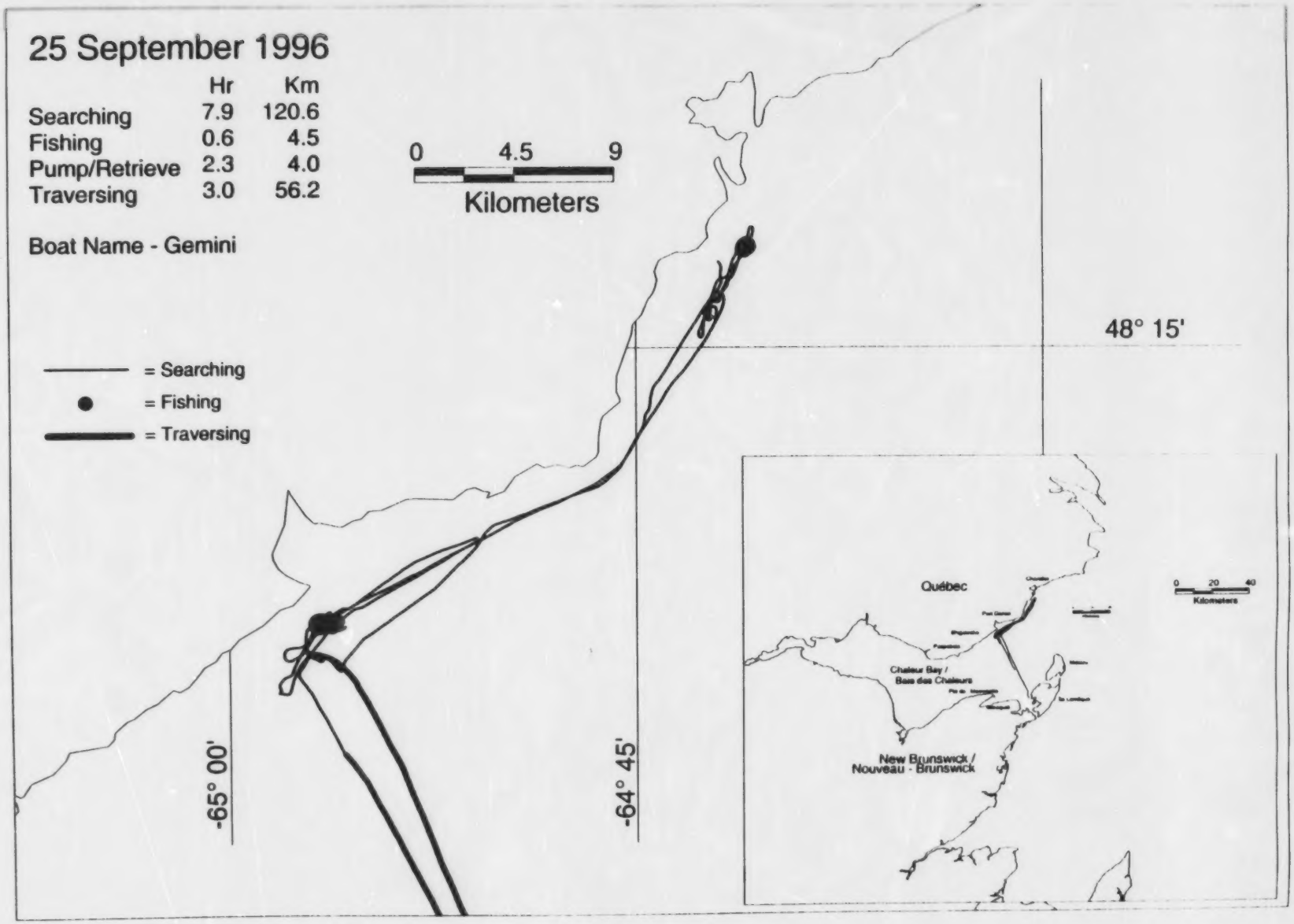

15 September 1996
Hr Km
Searching 9.5 144.5
Fishing 0.3 2.5
Pump/Retrieve 3.5 5.9
Traversing 2.2 41.2
Boat Name - Gemini
= Searching
= Fishing
= Traversing
48° 10'
0 3 6
Kilometers
-65° 00'
-64° 50'
-64° 40'
Chaleur Bay /
Baie des Chaleurs

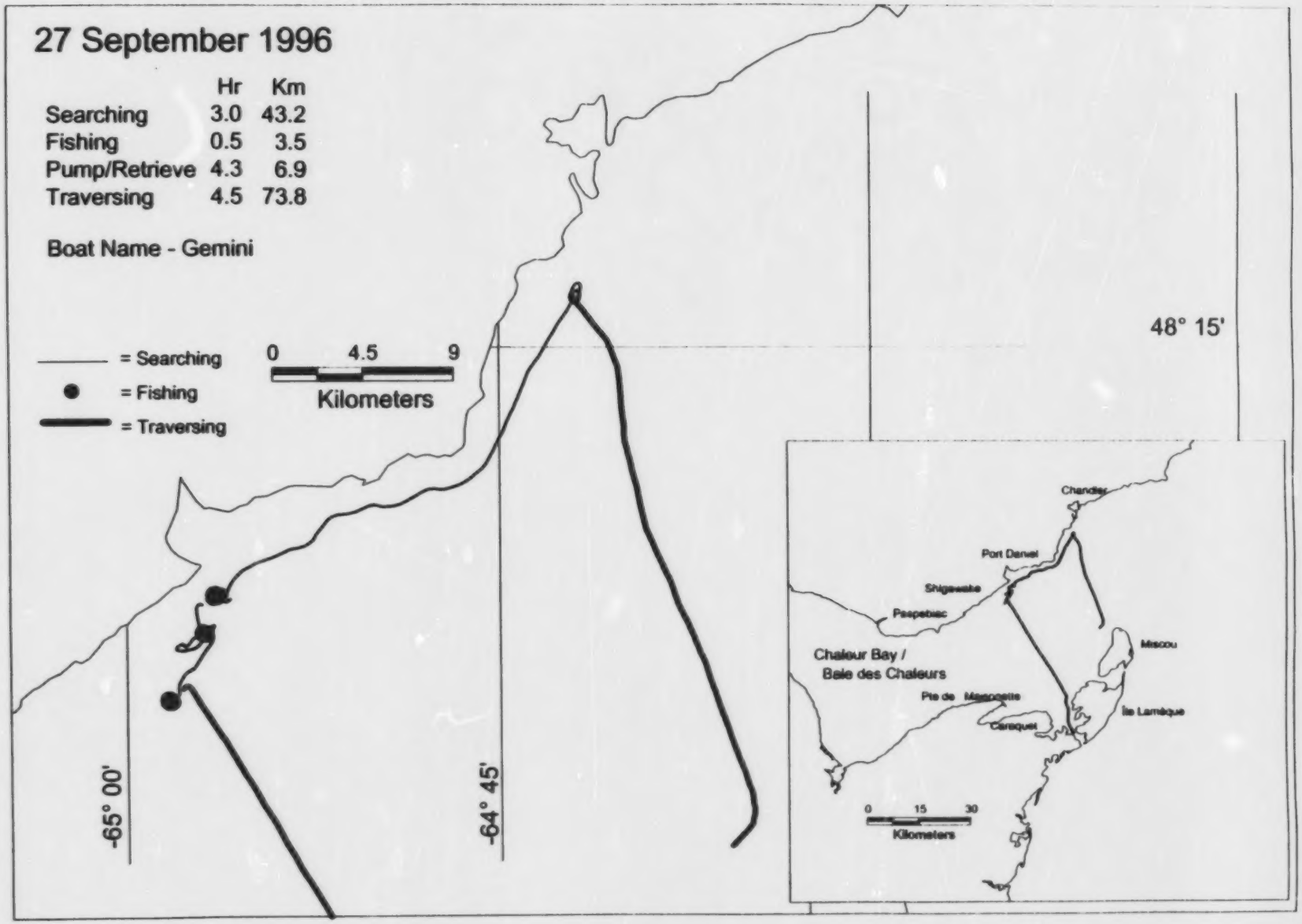

16 September 1996
Hr Km
Searching 13.1 210.1
Traversing 1.5 28.9
Boat Name - Gemini
0 5 10
Kilometers
= Searching
= Traversing
48° 20'
-65° 00'
-64° 40'
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonnette
Carleton
Mascou
Ile Lamèque
0 20 40
Kilometers

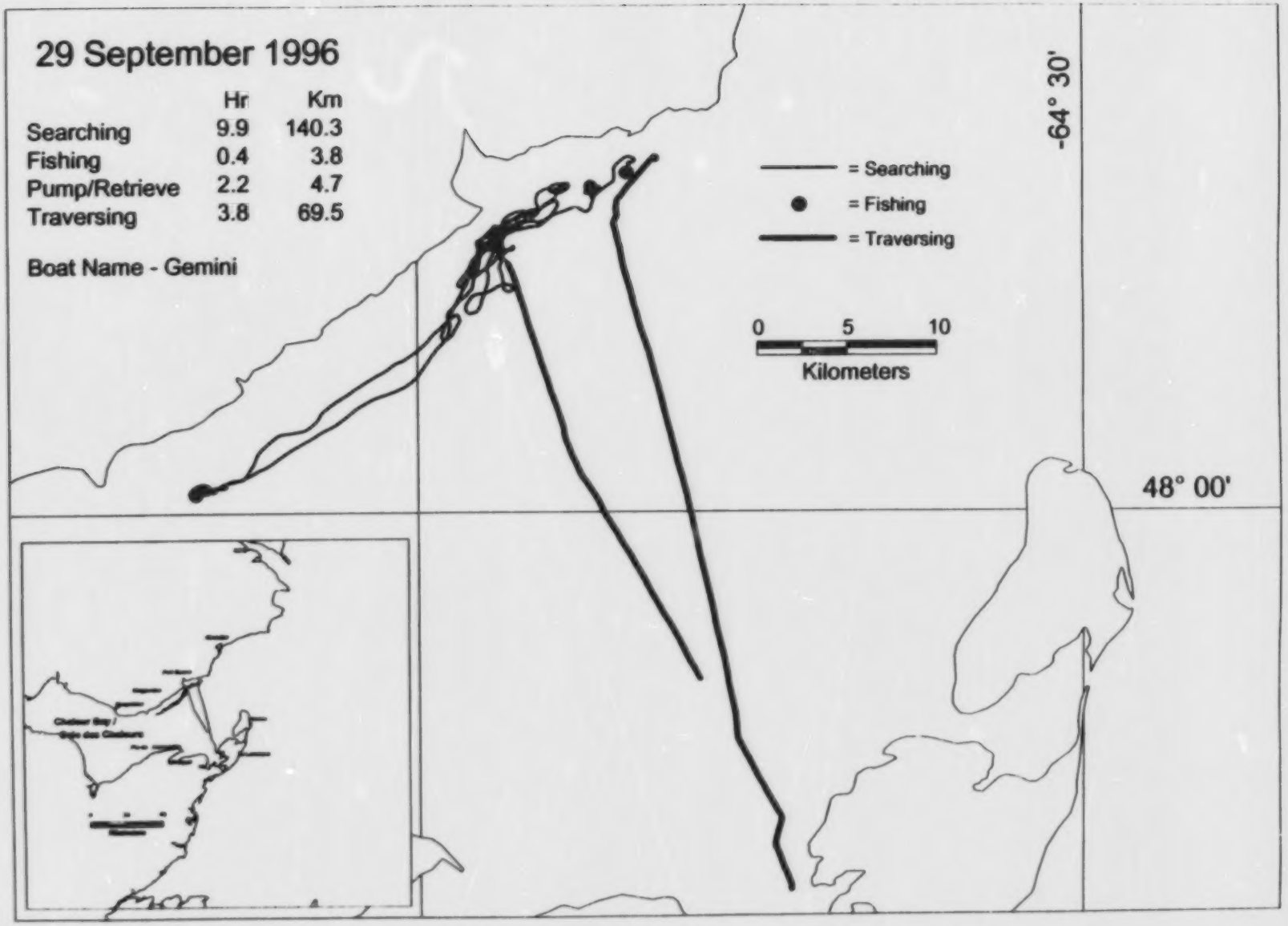

20 September 1996
Hr Km
Searching 8.4 104.4
Fishing 0.4 3.1
Pump/Retrieve 2.9 5.5
Traversing 3.0 59.2
Boat Name - Gemini
0 5 10
Kilometers
-64° 30'
48° 00'
47° 45'
Chaleur Bay /
Baie des Chaleurs
= Searching
= Fishing
= Traversing

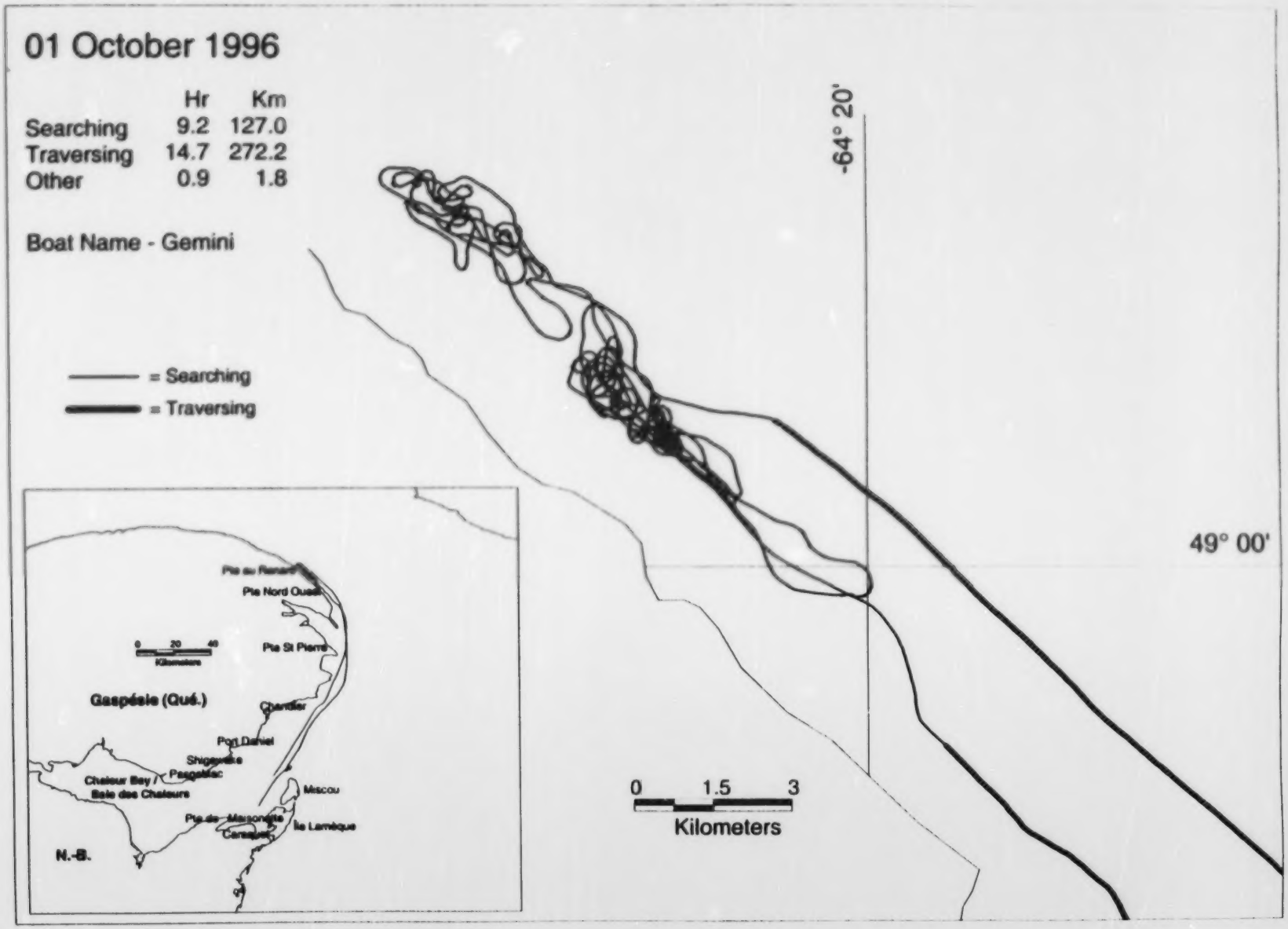

22 September 1996
Hr Km
Searching 3.5 51.8
Fishing 0.2 1.7
Pump/Retrieve 3.2 4.9
Traversing 2.3 42.7
Boat Name - Gemini
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonnette
Carleton
Miscou
Ile Lamèque
0 15 30
Kilometers
0 4 8
Kilometers
= Searching
= Fishing
= Traversing
48° 00'
-64° 45'
-64° 15'

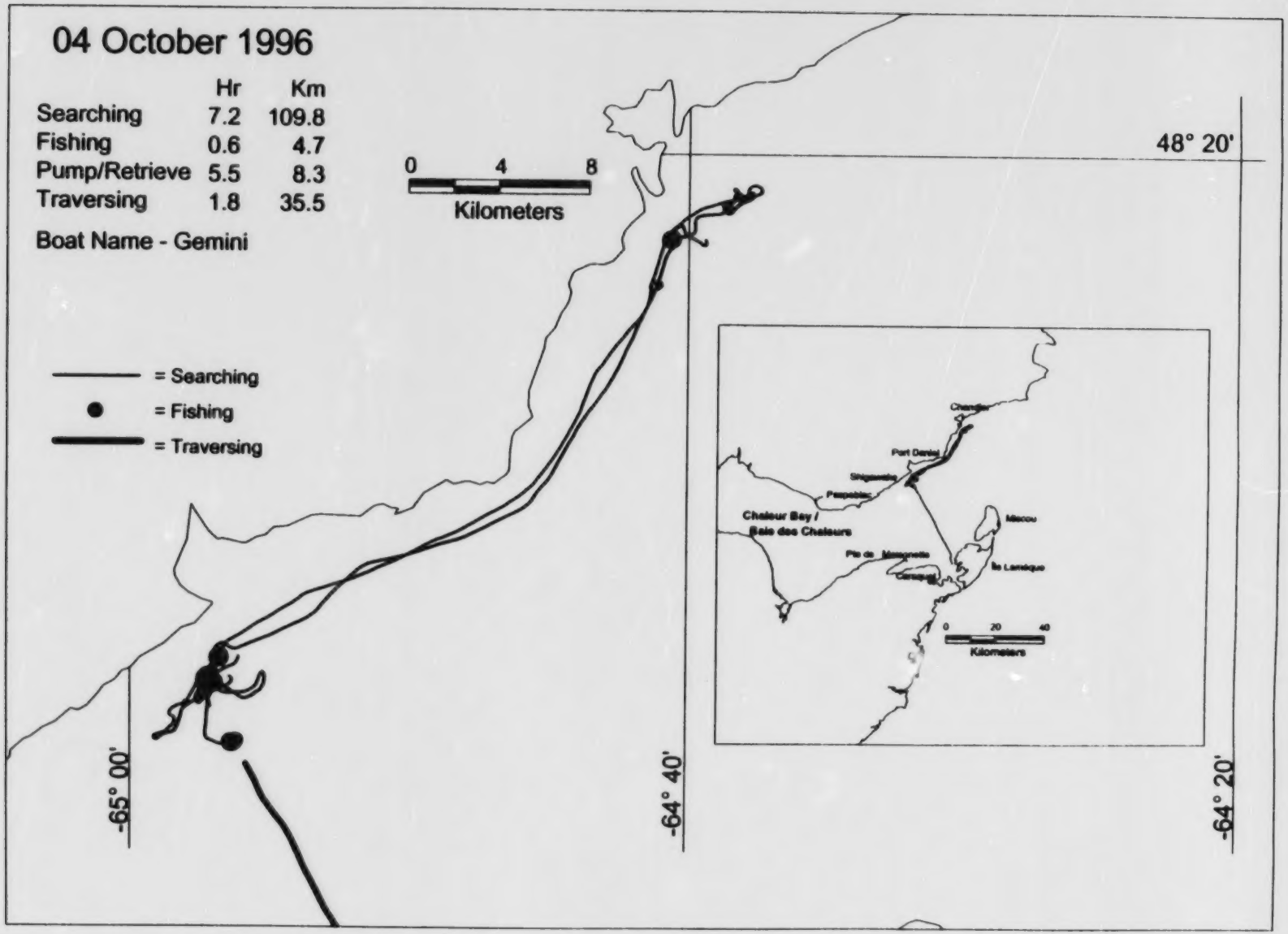

24 September 1996
Hr Km
Searching 3.2 48.5
Fishing 0.6 3.7
Pump/Retrieve 5.8 11.4
Traversing 4.3 78.8
Boat Name - Gemini
-64° 30'
-64° 15'
-64° 00'
48° 15'
48° 00'
= Searching
= Fishing
= Traversing
0 7.5 15
Kilometers

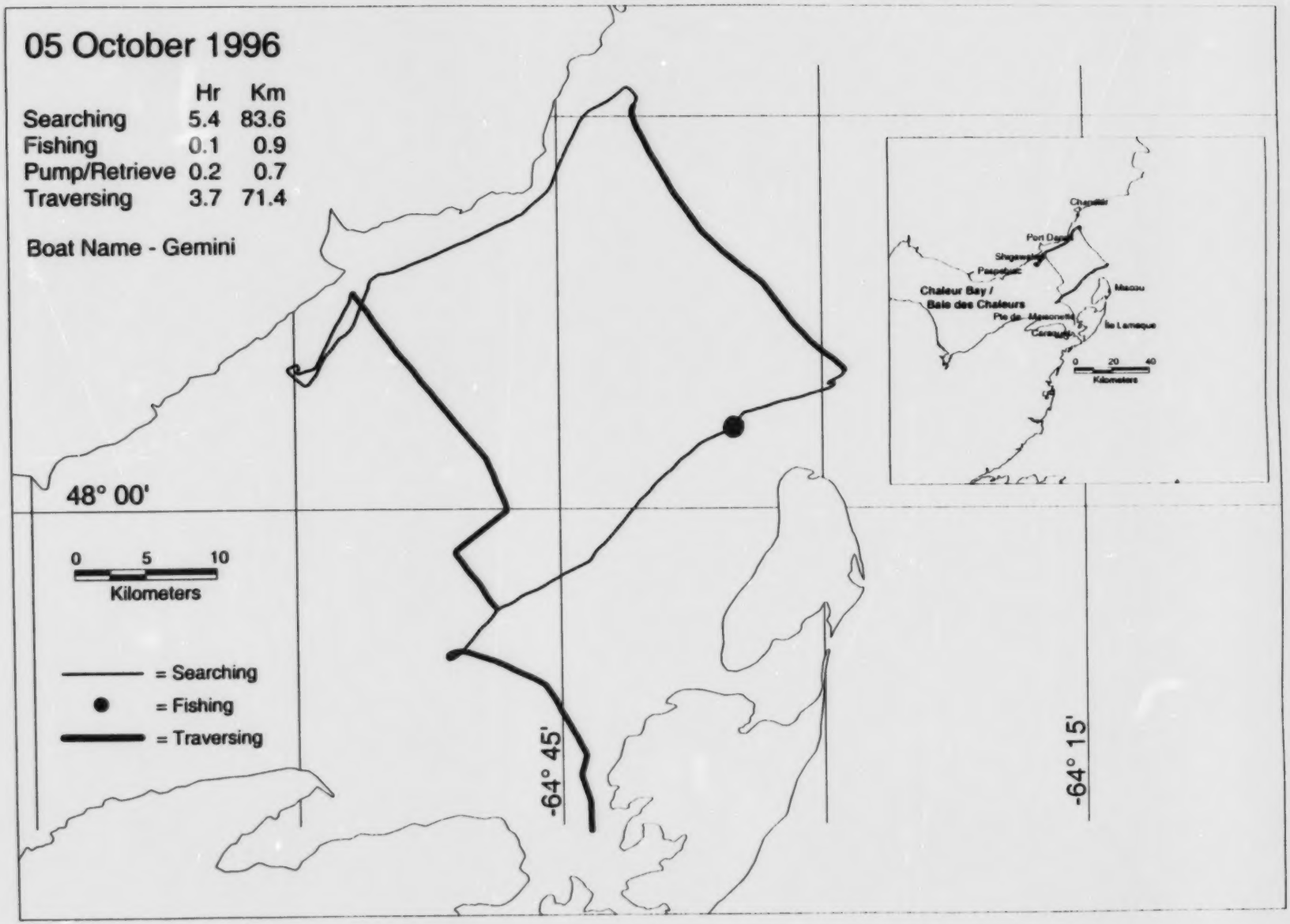

25 September 1996
Hr Km
Searching 7.9 120.6
Fishing 0.6 4.5
Pump/Retrieve 2.3 4.0
Traversing 3.0 56.2
Boat Name - Gemini
0 4.5 9
Kilometers
= Searching
= Fishing
= Traversing
48° 15'
-65° 00'
-64° 45'
Québec
Chaleur Bay / Baie des Chaleurs
New Brunswick / Nouveau - Brunswick
0 20 40
Kilometers

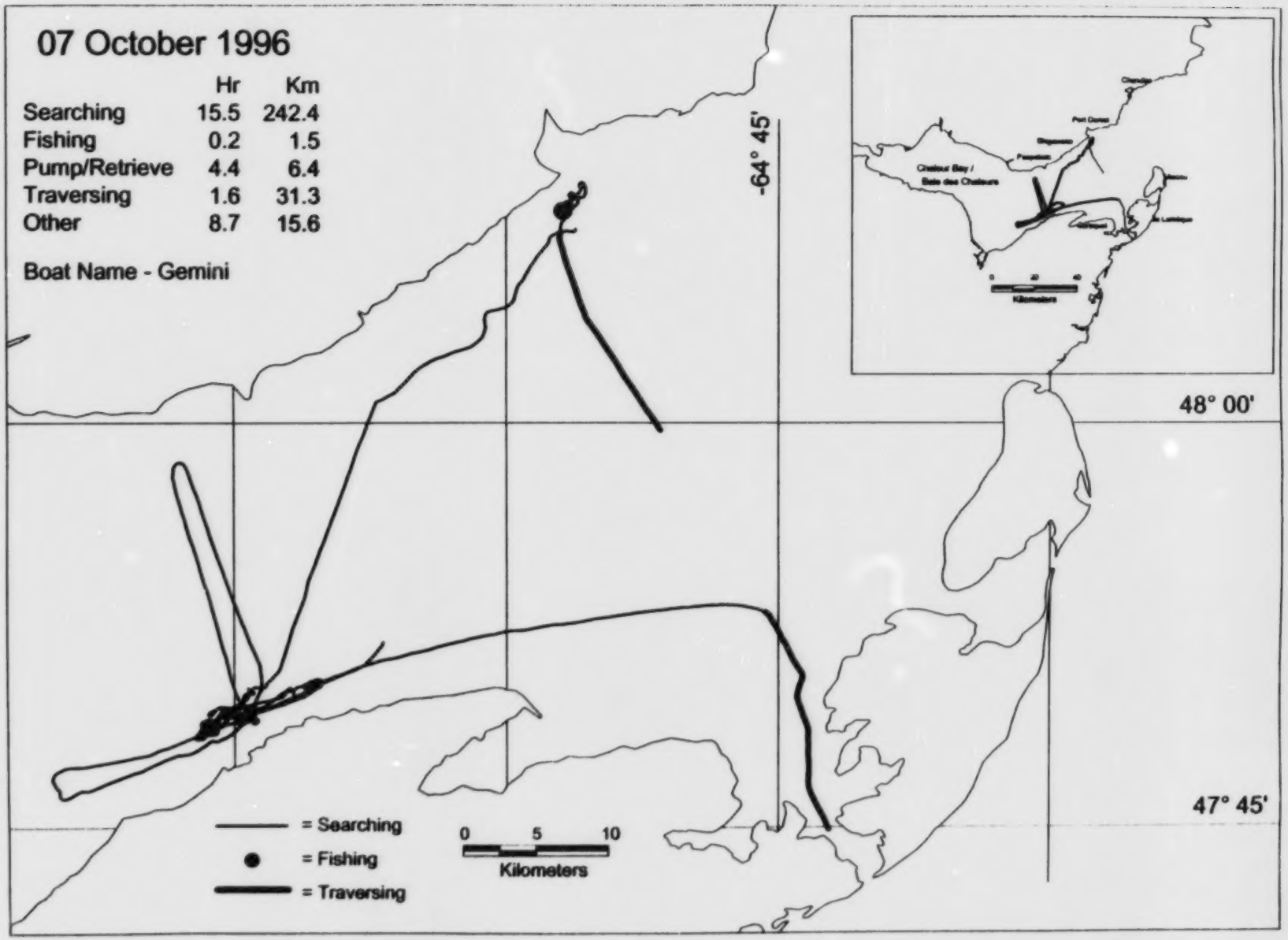

27 September 1996
Hr Km
Searching 3.0 43.2
Fishing 0.5 3.5
Pump/Retrieve 4.3 6.9
Traversing 4.5 73.8
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 4.5 9
Kilometers
48° 15'
-65° 00'
-64° 45'
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Miscou
Pte de Maisonnette
Caraquet
Île Lamèque
0 15 30
Kilometers

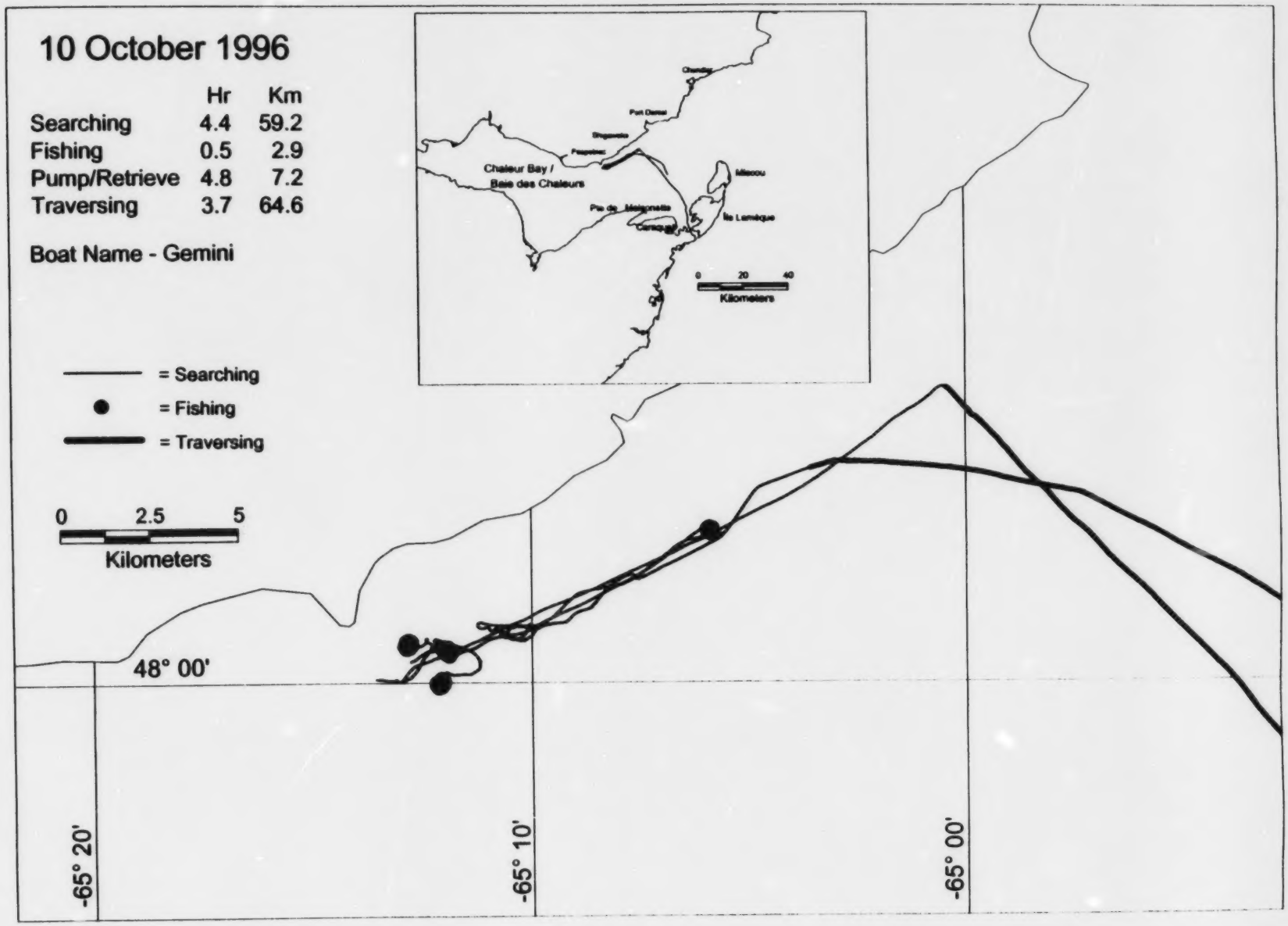

29 September 1996
Hr Km
Searching 9.9 140.3
Fishing 0.4 3.8
Pump/Retrieve 2.2 4.7
Traversing 3.8 69.5
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
-64° 30'
48° 00'

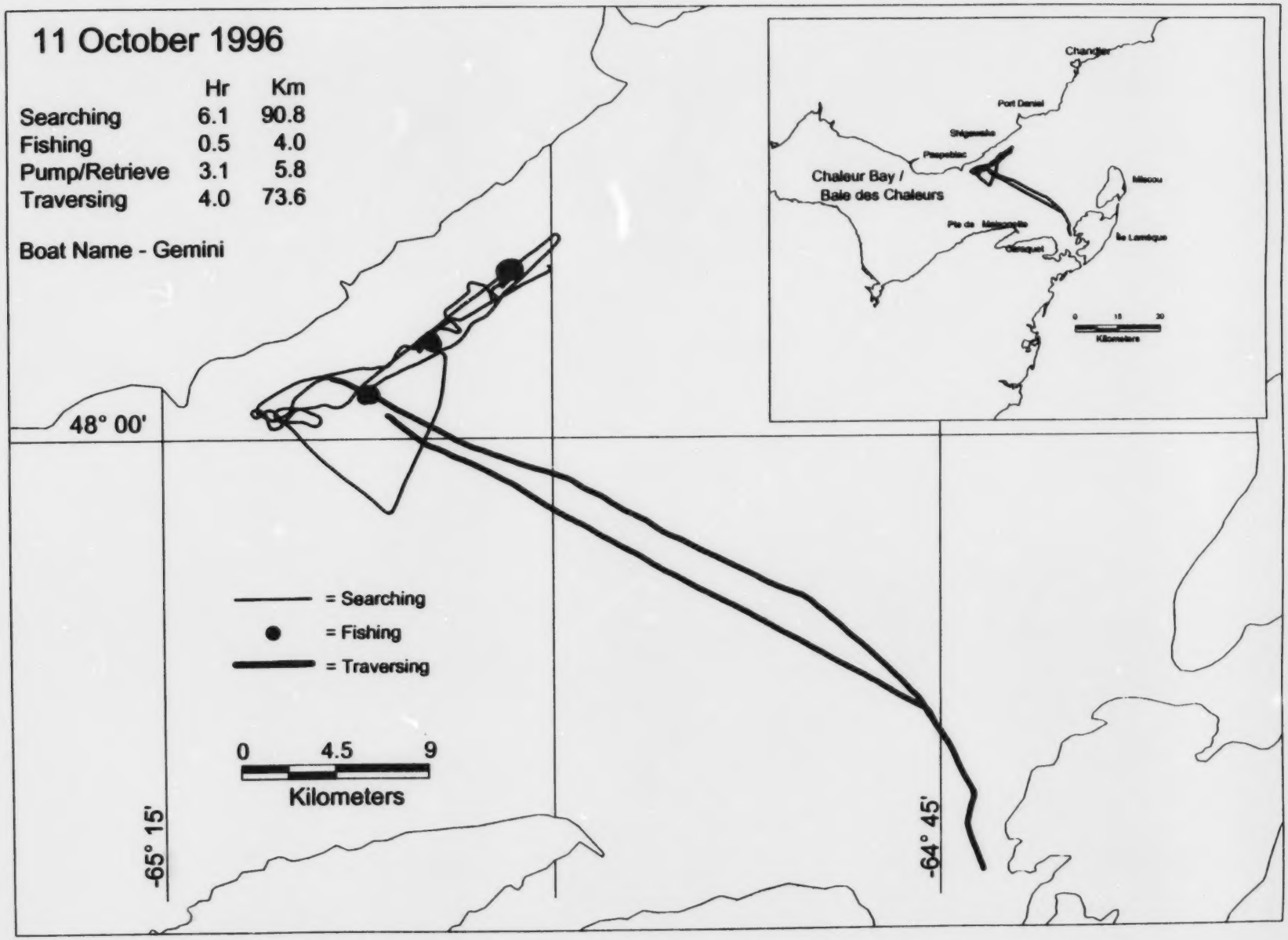

01 October 1996
Hr Km
Searching 9.2 127.0
Traversing 14.7 272.2
Other 0.9 1.8
Boat Name - Gemini
= Searching
= Traversing
-64° 20'
49° 00'
0 1.5 3
Kilometers
Pte Nord Ouest
Pte St Pierre
Gaspésie (Qué.)
Chandler
Port Daniel
Shigawake
Pasgebiac
Chaleur Bay / Baie des Chaleurs
Miscou
Pte de Maisonette
Caraquet
Île Lamèque
N.-B.

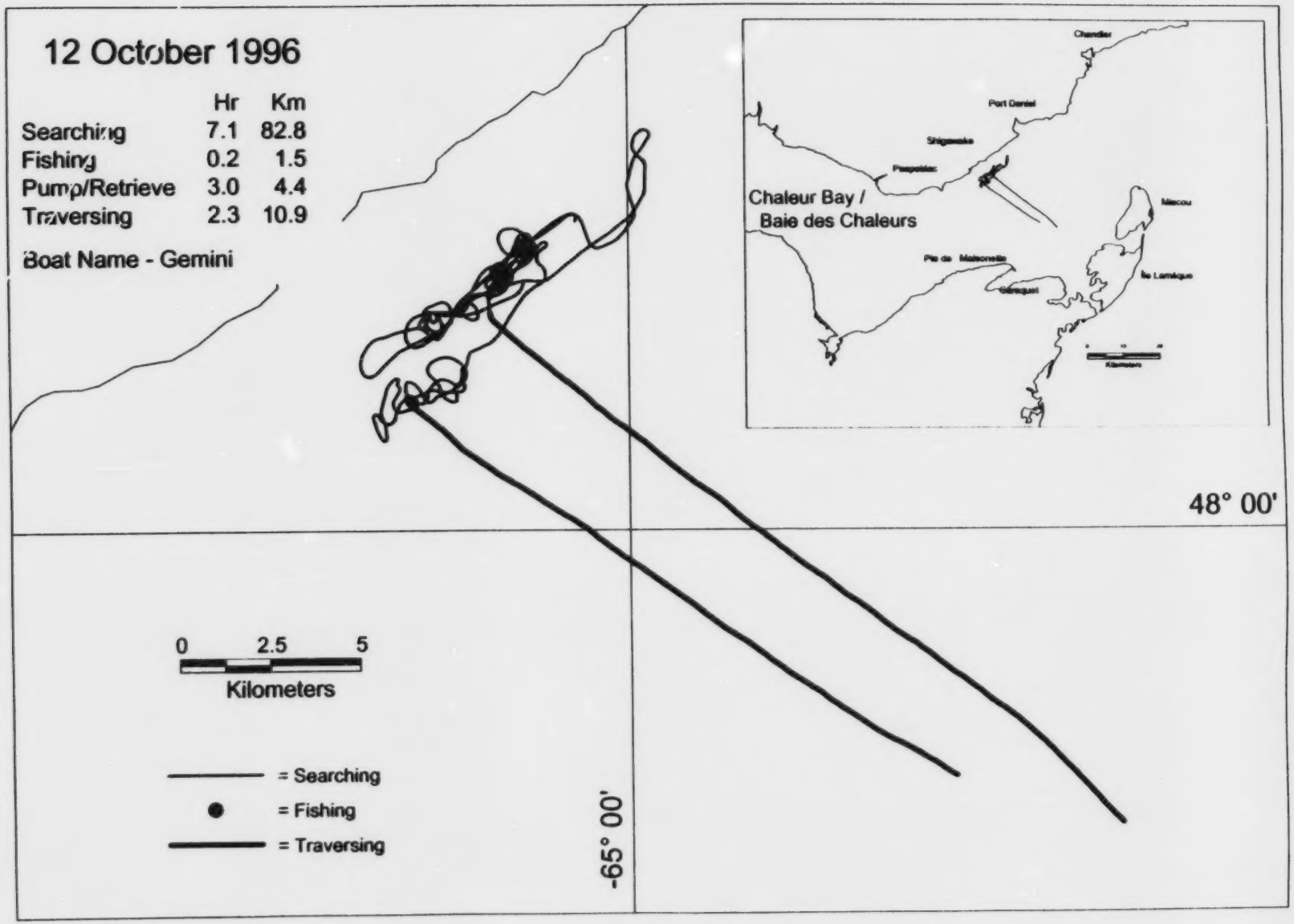

04 October 1996
Hr Km
Searching 7.2 109.8
Fishing 0.6 4.7
Pump/Retrieve 5.5 8.3
Traversing 1.8 35.5
Boat Name - Gemini
0 4 8
Kilometers
48° 20'
= Searching
= Fishing
= Traversing
Chaleur Bay / Baie des Chaleurs
0 20 40
Kilometers
-65° 00'
-64° 40'
-64° 20'

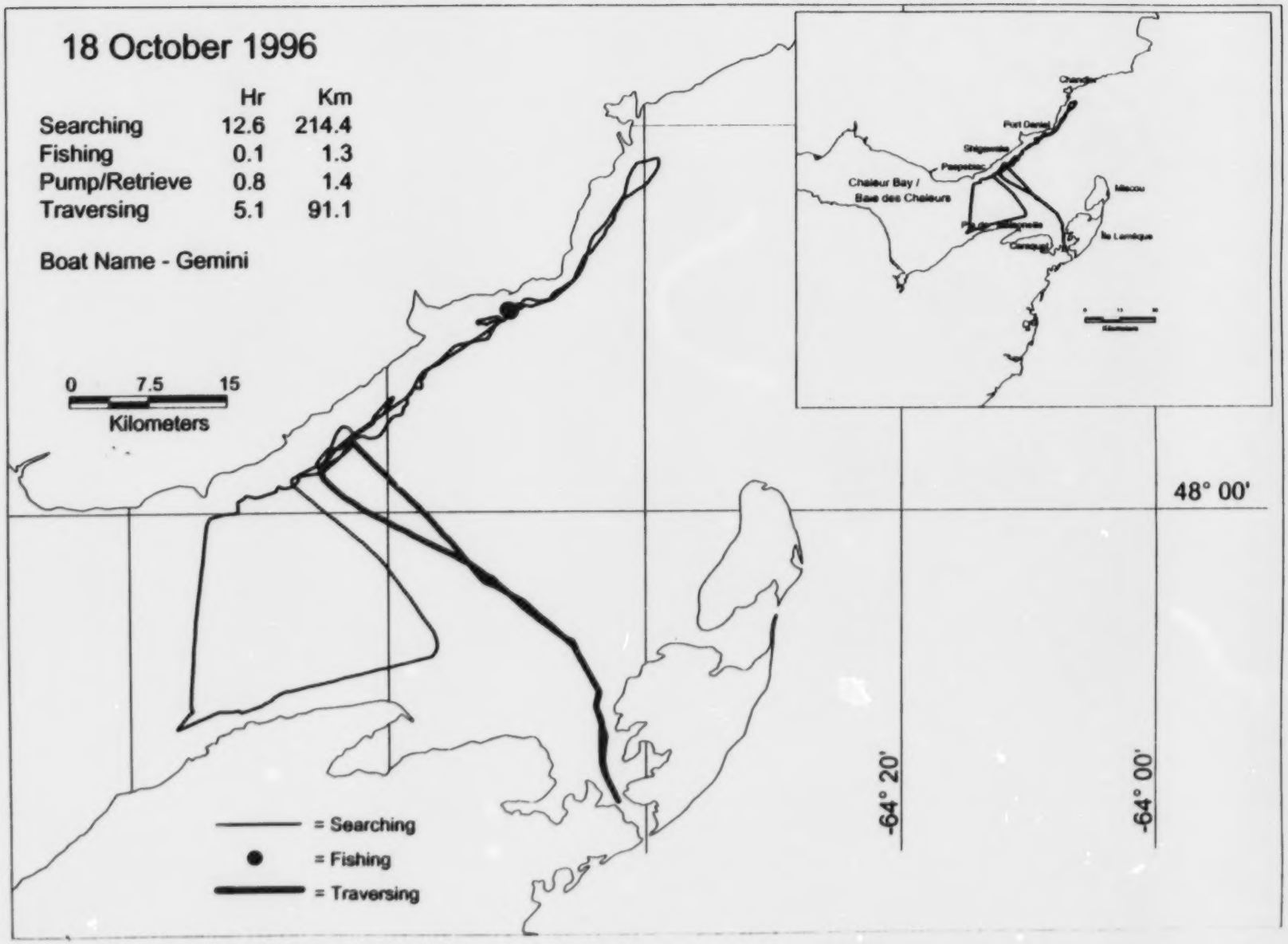

05 October 1996
Hr Km
Searching 5.4 83.6
Fishing 0.1 0.9
Pump/Retrieve 0.2 0.7
Traversing 3.7 71.4
Boat Name - Gemini
48° 00'
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
-64° 45'
-64° 15'
Chaleur Bay / Baie des Chaleurs
Kilometers

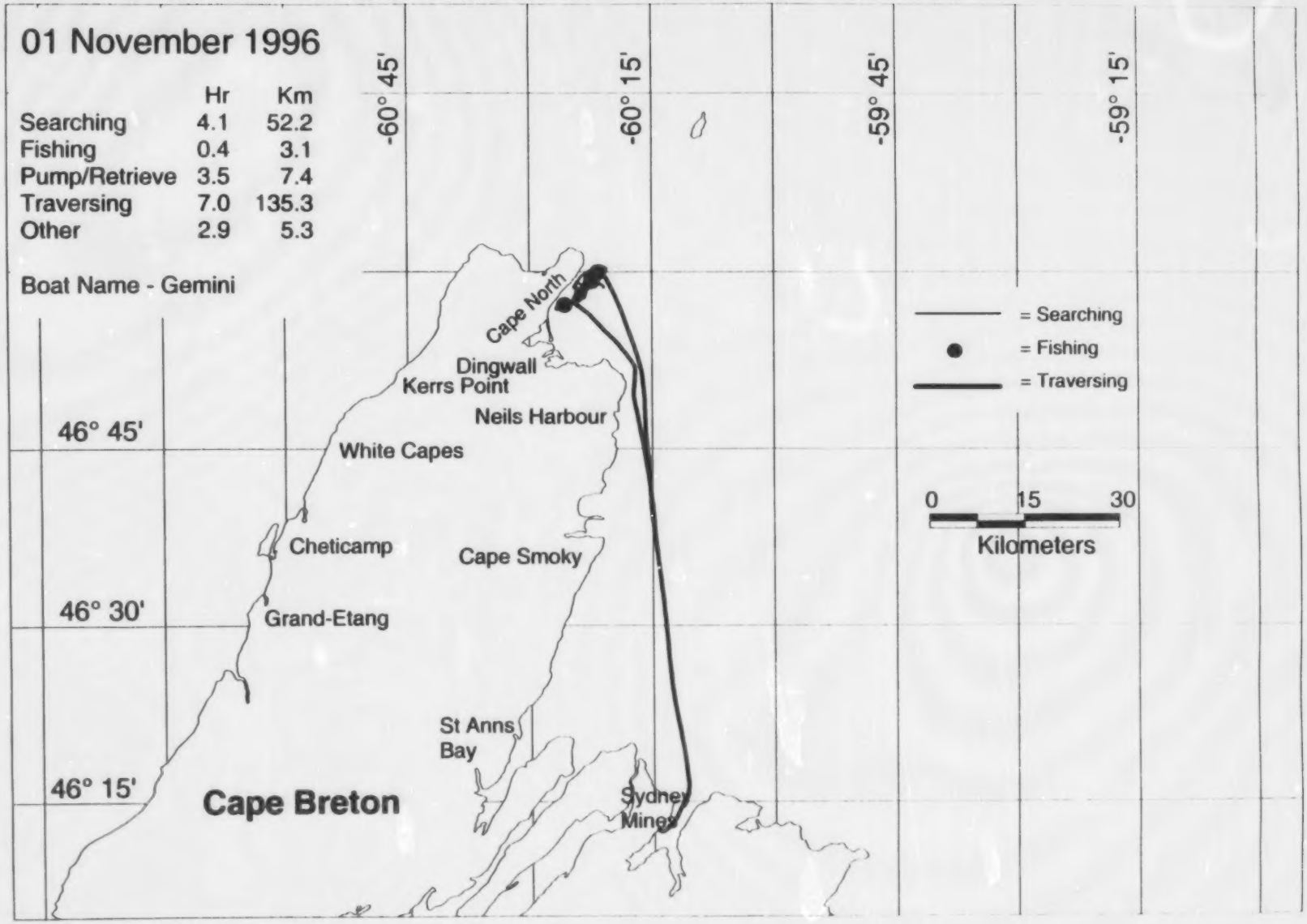

07 October 1996
Hr Km
Searching 15.5 242.4
Fishing 0.2 1.5
Pump/Retrieve 4.4 6.4
Traversing 1.6 31.3
Other 8.7 15.6
Boat Name - Gemini
-64° 45'
48° 00'
47° 45'
= Searching
= Fishing
= Traversing
0 5 10
Kilometers

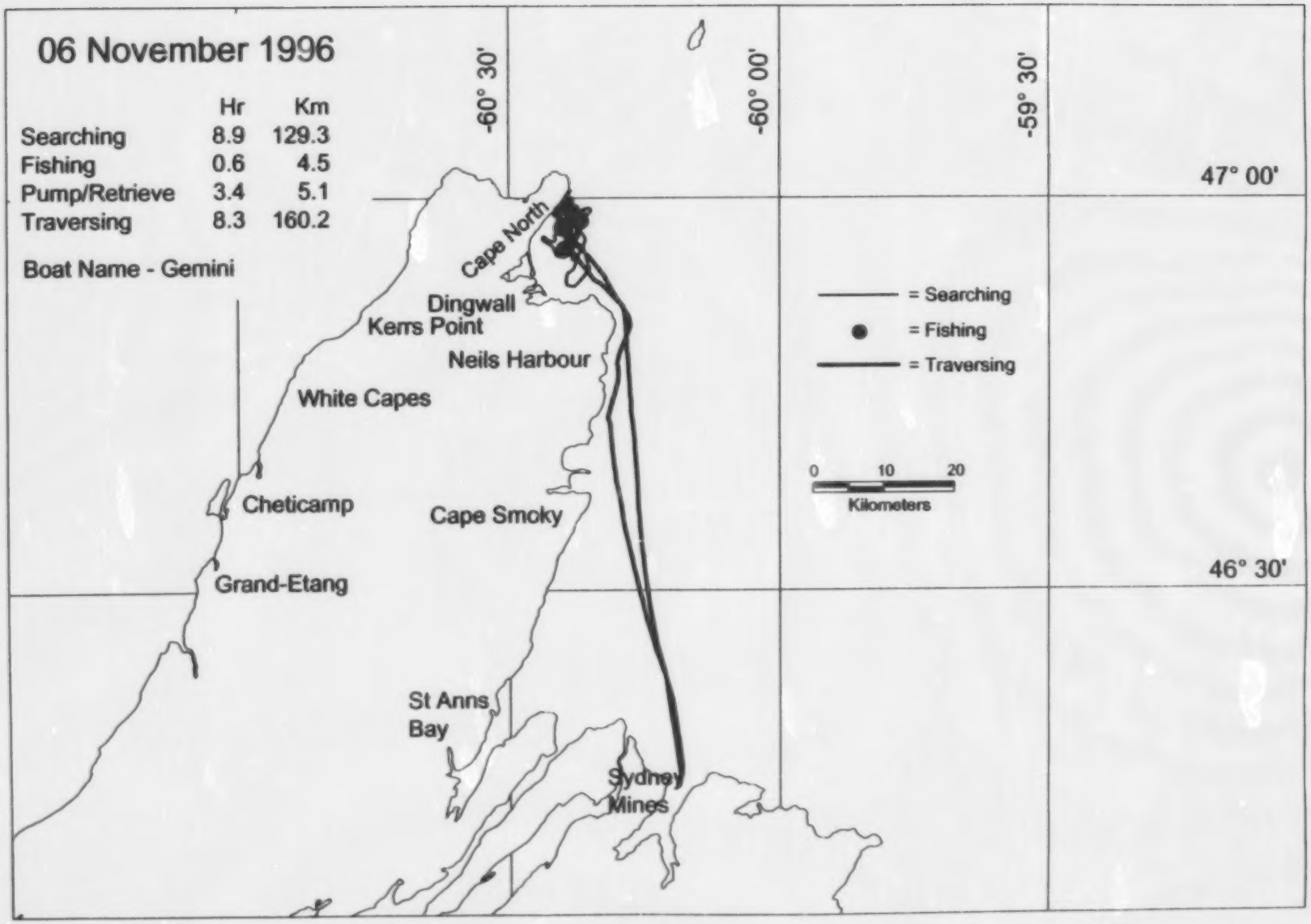

10 October 1996
Hr Km
Searching 4.4 59.2
Fishing 0.5 2.9
Pump/Retrieve 4.8 7.2
Traversing 3.7 64.6
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 2.5 5
Kilometers
Chaleur Bay / Baie des Chaleurs
Miscou
Ile Lameque
0 20 40
Kilometers
48° 00'
-65° 20'
-65° 10'
-65° 00'

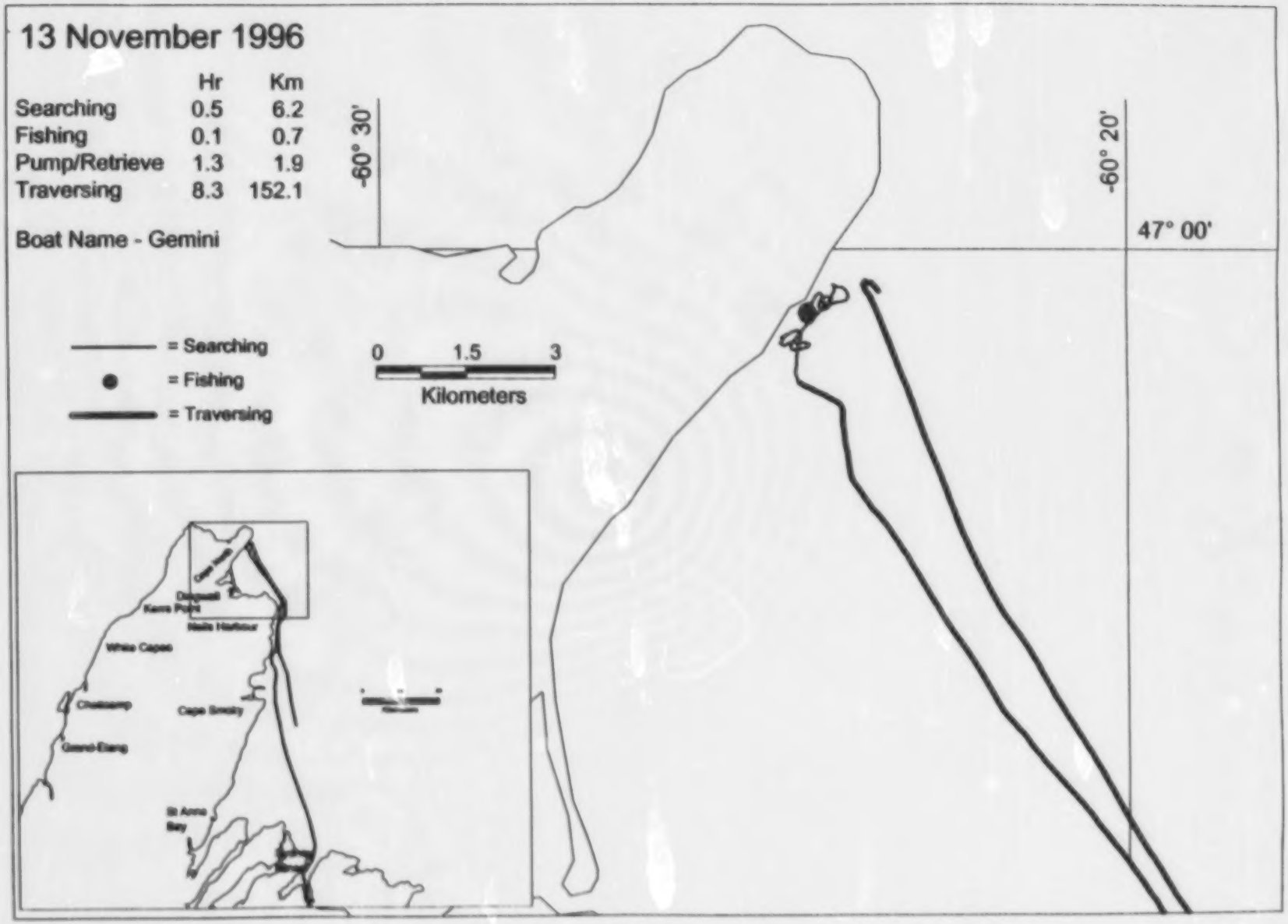

11 October 1996
Hr Km
Searching 6.1 90.8
Fishing 0.5 4.0
Pump/Retrieve 3.1 5.8
Traversing 4.0 73.6
Boat Name - Gemini
48° 00'
-65° 15'
-64° 45'
= Searching
= Fishing
= Traversing
0 4.5 9
Kilometers
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Miscou
Pte de Maisonnette
Caraquet
Ile Lamèque
0 15 30
Kilometers

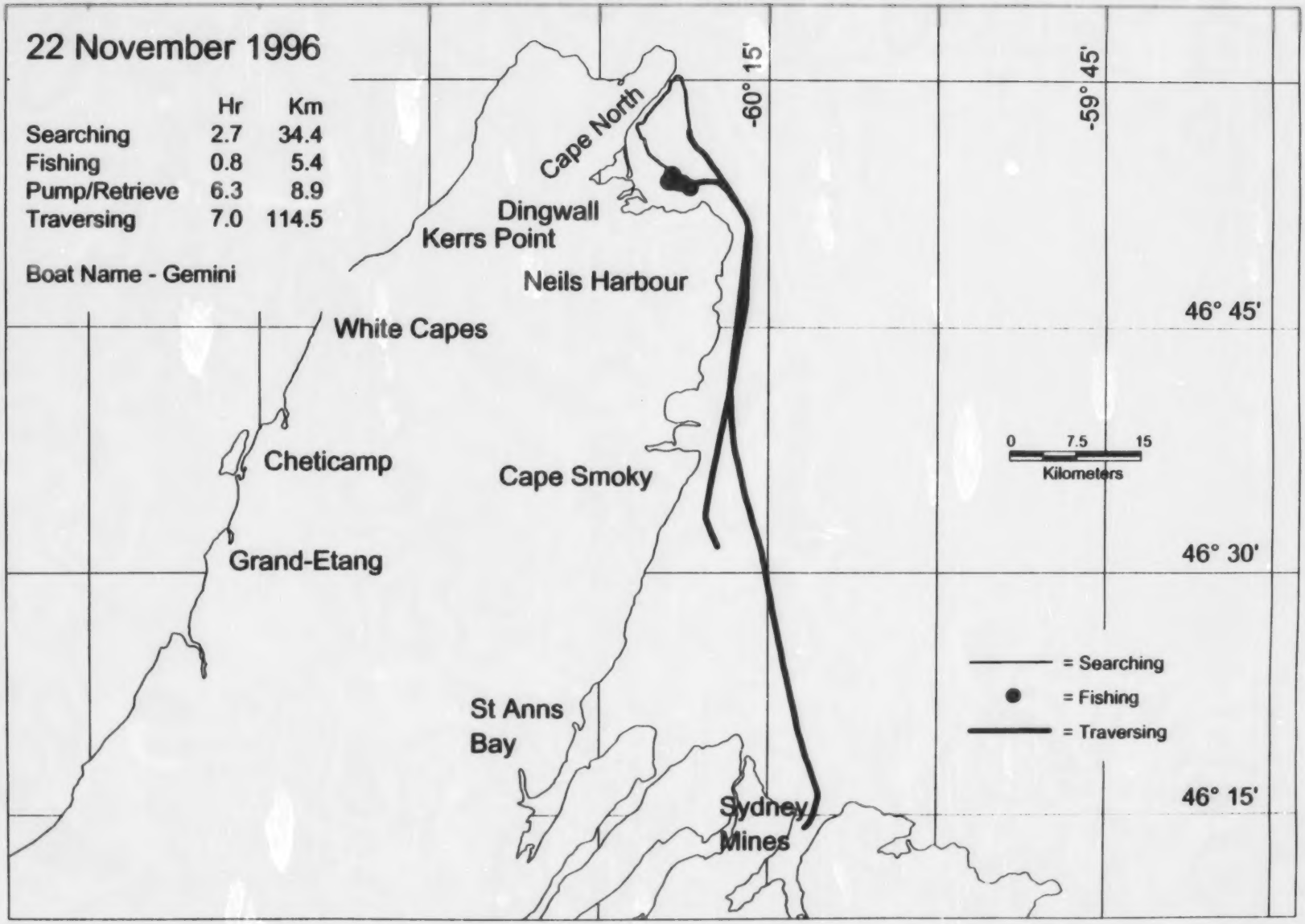

12 October 1996
Hr Km
Searching 7.1 82.8
Fishing 0.2 1.5
Pump/Retrieve 3.0 4.4
Traversing 2.3 10.9
Boat Name - Gemini
Chaleur Bay /
Baie des Chaleurs
48° 00'
-65° 00'
0 2.5 5
Kilometers
= Searching
= Fishing
= Traversing

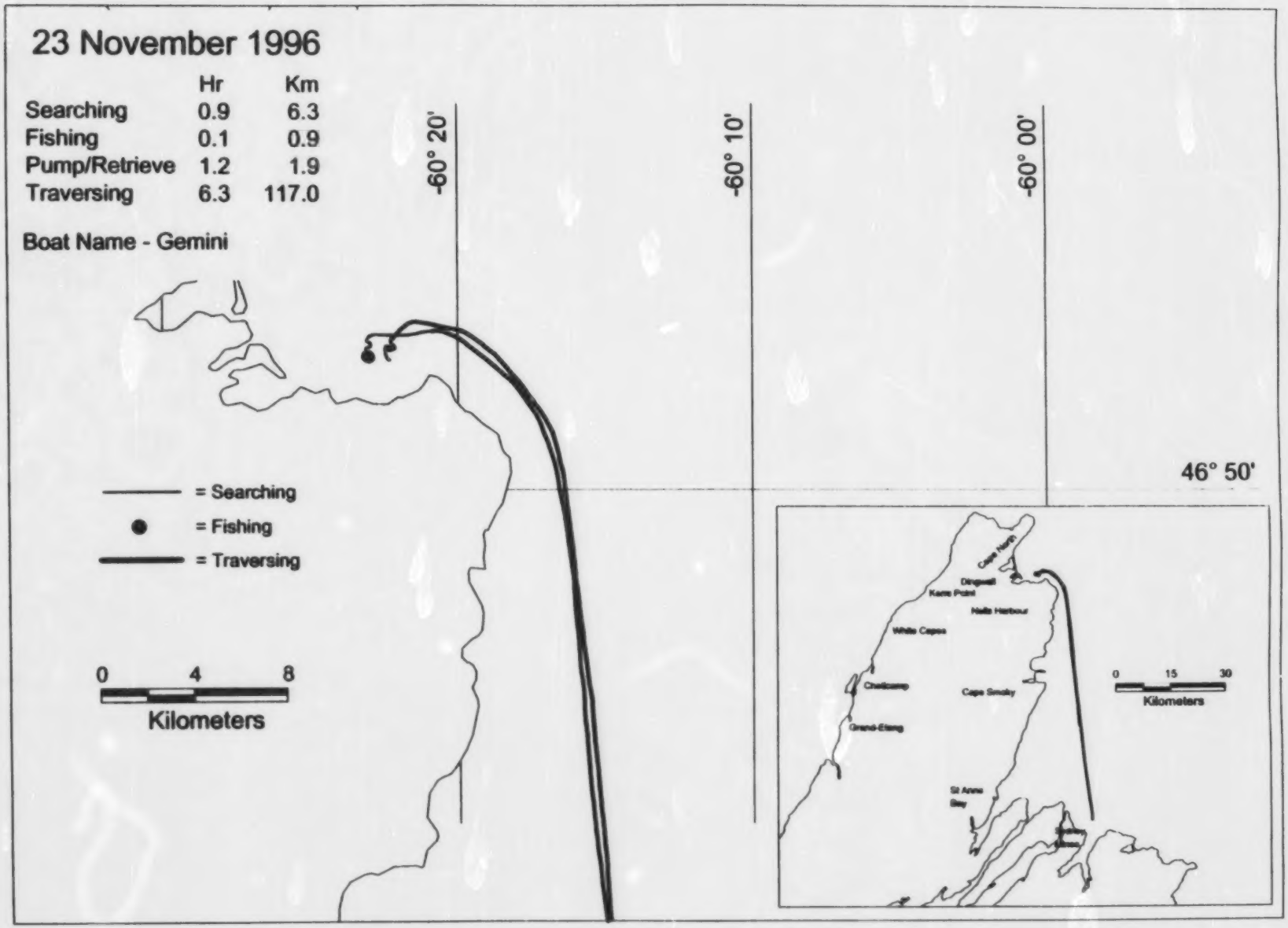

18 October 1996
Hr Km
Searching 12.6 214.4
Fishing 0.1 1.3
Pump/Retrieve 0.8 1.4
Traversing 5.1 91.1
Boat Name - Gemini
0 7.5 15
Kilometers
48° 00'
-64° 20'
-64° 00'
= Searching
= Fishing
= Traversing
Chaleur Bay / Baie des Chaleurs
Miscou
Ile Lamèque

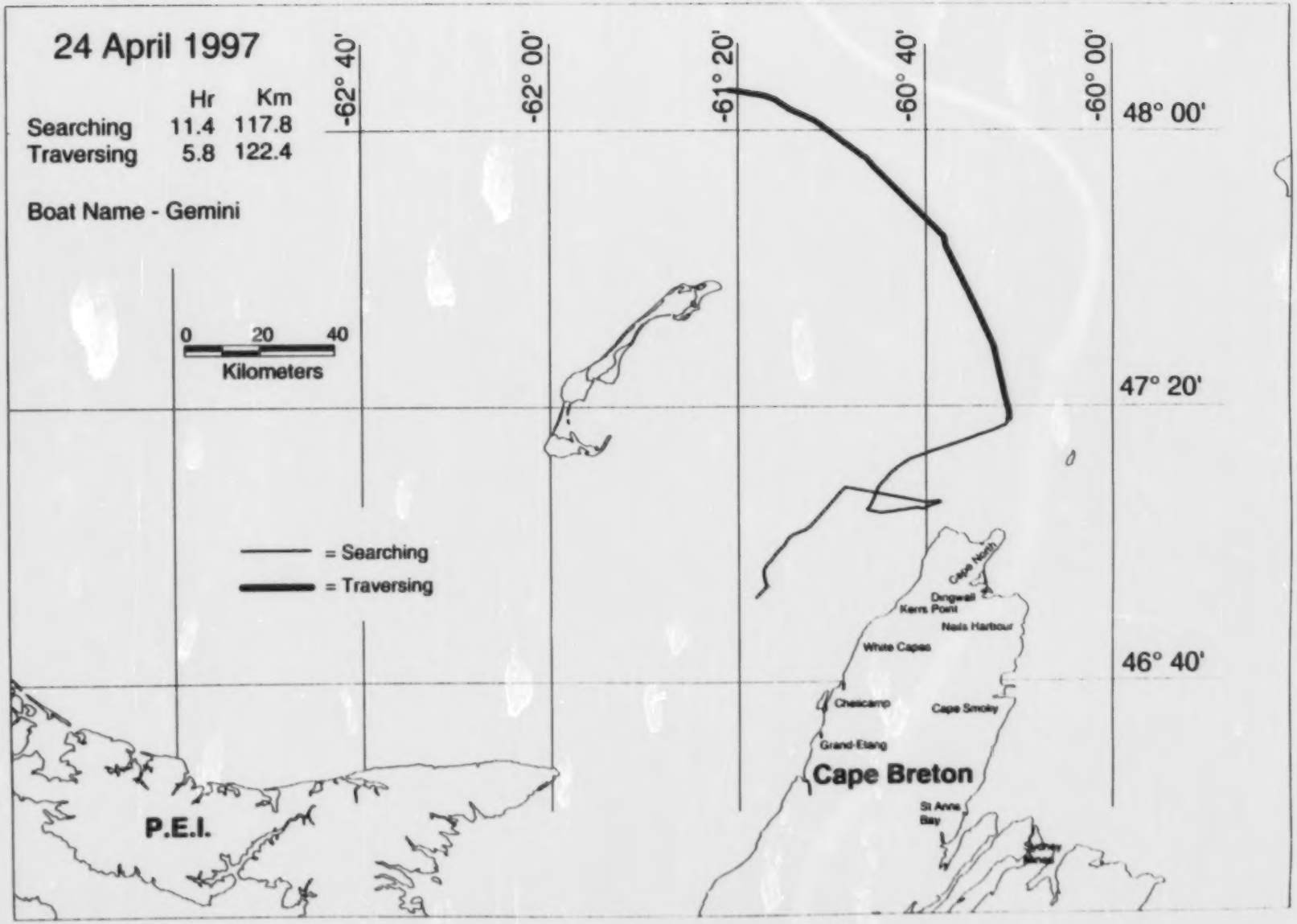

01 November 1996
Hr Km
Searching 4.1 52.2
Fishing 0.4 3.1
Pump/Retrieve 3.5 7.4
Traversing 7.0 135.3
Other 2.9 5.3
Boat Name - Gemini
-60° 45'
-60° 15'
-59° 45'
-59° 15'
46° 45'
46° 30'
46° 15'
Cape North
Dingwall
Kerrs Point
Neils Harbour
White Capes
Cheticamp
Cape Smoky
Grand-Etang
St Anns Bay
Sydney Mines
Cape Breton
= Searching
= Fishing
= Traversing
0 15 30
Kilometers

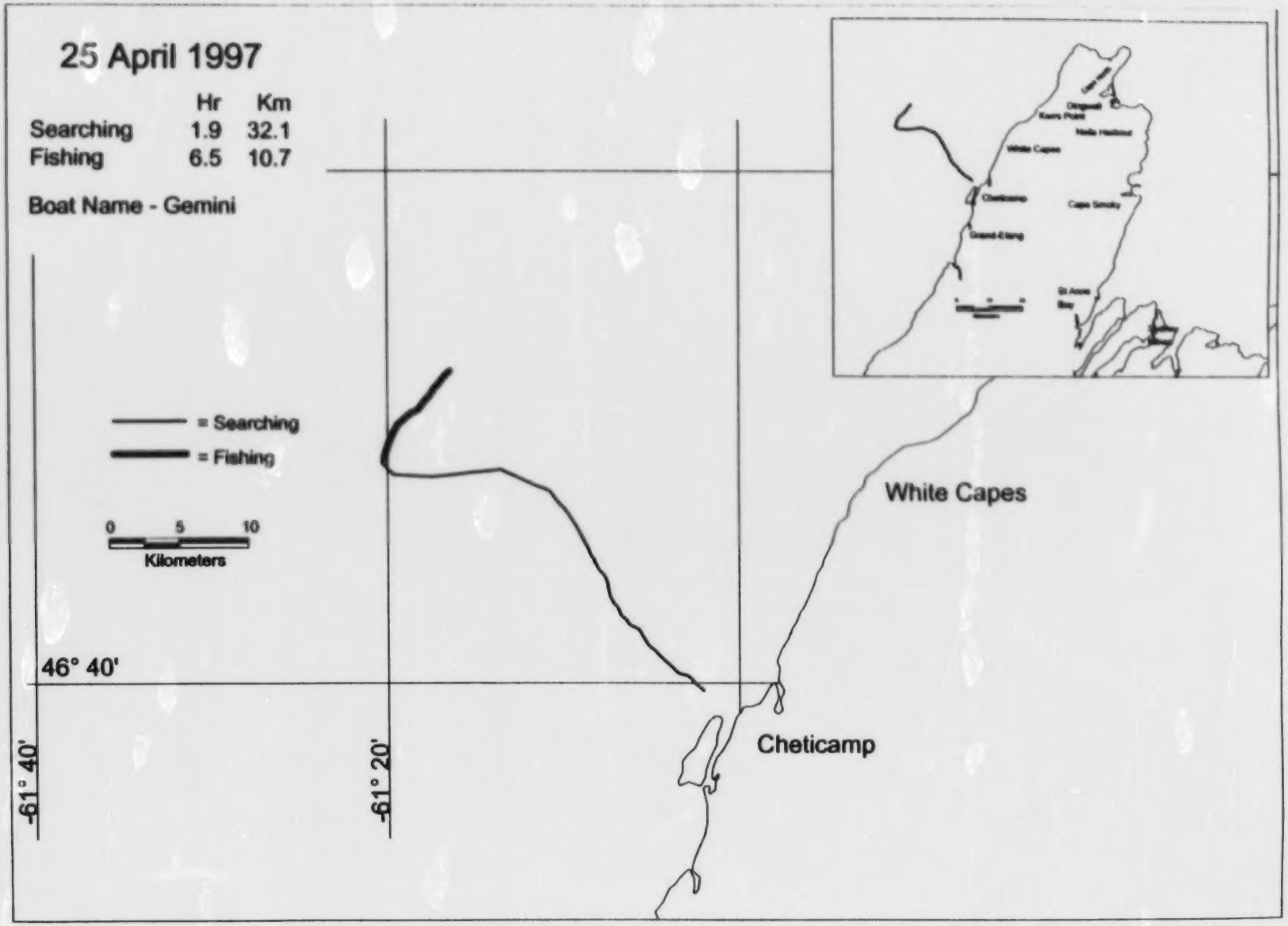

06 November 1996
Hr Km
Searching 8.9 129.3
Fishing 0.6 4.5
Pump/Retrieve 3.4 5.1
Traversing 8.3 160.2
Boat Name - Gemini
-60° 30'
-60° 00'
-59° 30'
47° 00'
46° 30'
Cape North
Dingwall
Kerrs Point
Neils Harbour
White Capes
Cheticamp
Cape Smoky
Grand-Etang
St Anns Bay
Sydney Mines
= Searching
= Fishing
= Traversing
0 10 20
Kilometers

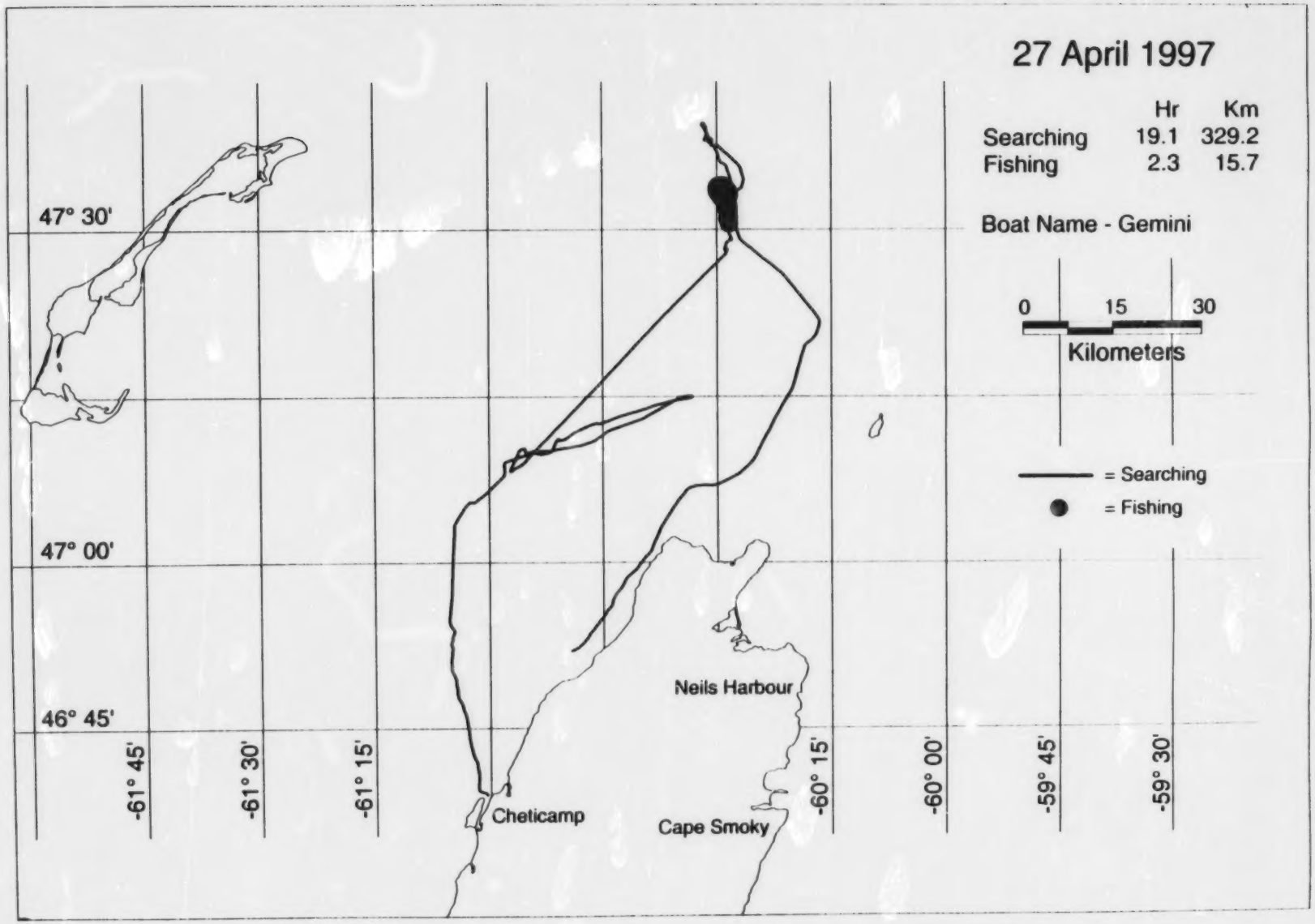

13 November 1996
Hr Km
Searching 0.5 6.2
Fishing 0.1 0.7
Pump/Retrieve 1.3 1.9
Traversing 8.3 152.1
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 1.5 3
Kilometers
-60° 30'
-60° 20'
47° 00'

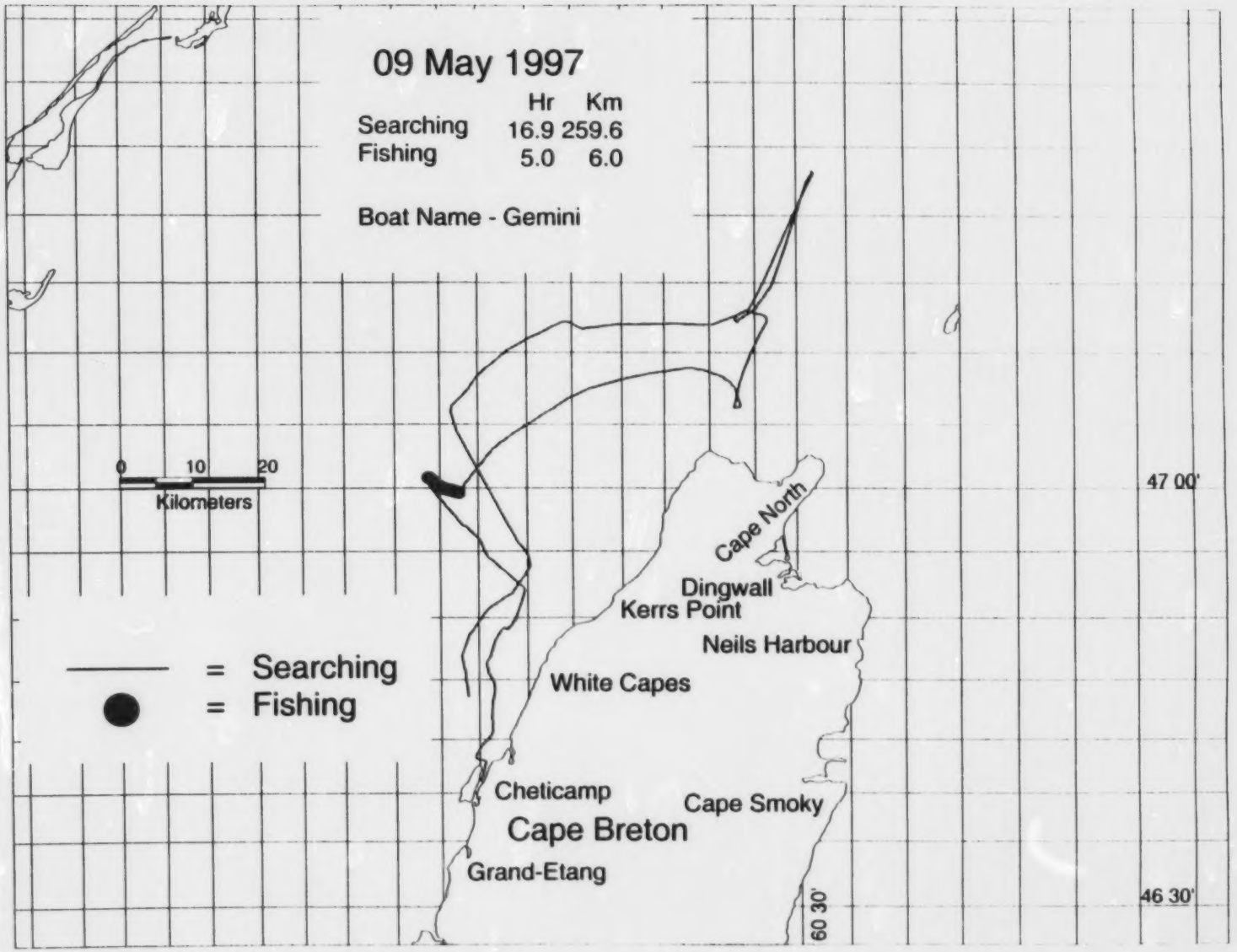

22 November 1996
Hr Km
Searching 2.7 34.4
Fishing 0.8 5.4
Pump/Retrieve 6.3 8.9
Traversing 7.0 114.5
Boat Name - Gemini
Cape North
Dingwall
Kerrs Point
Neils Harbour
White Capes
Cheticamp
Cape Smoky
Grand-Etang
St Anns Bay
Sydney Mines
-60° 15'
-59° 45'
46° 45'
46° 30'
46° 15'
0 7.5 15
Kilometers
= Searching
= Fishing
= Traversing

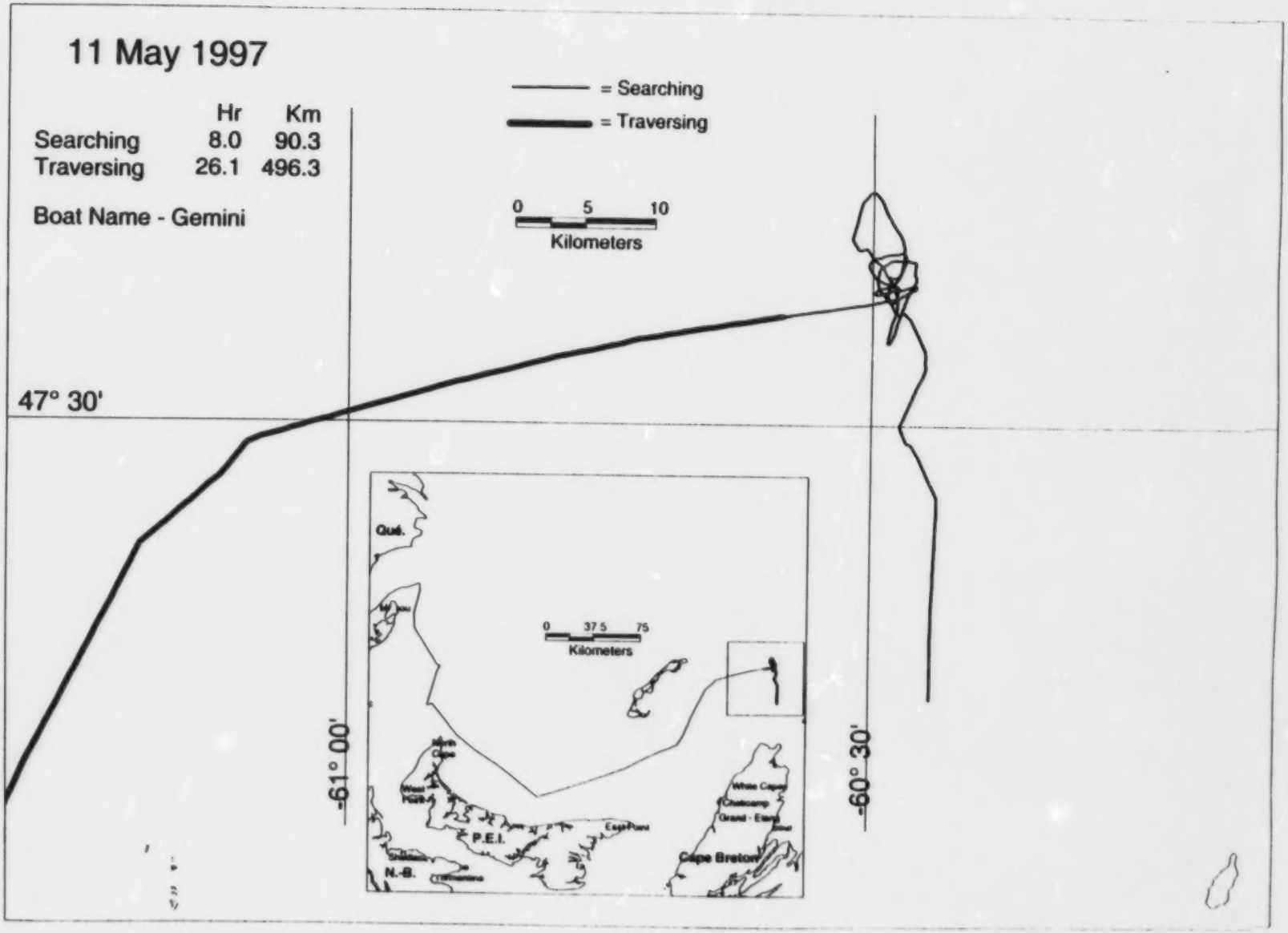

23 November 1996
Hr Km
Searching 0.9 6.3
Fishing 0.1 0.9
Pump/Retrieve 1.2 1.9
Traversing 6.3 117.0
Boat Name - Gemini
-60° 20'
-60° 10'
-60° 00'
46° 50'
= Searching
= Fishing
= Traversing
0 4 8
Kilometers
Cape North
Dingwall
Keltic Point
Neils Harbour
White Capes
Chéticamp
Cape Smoky
Grand-Etang
St Anns Bay
0 15 30
Kilometers

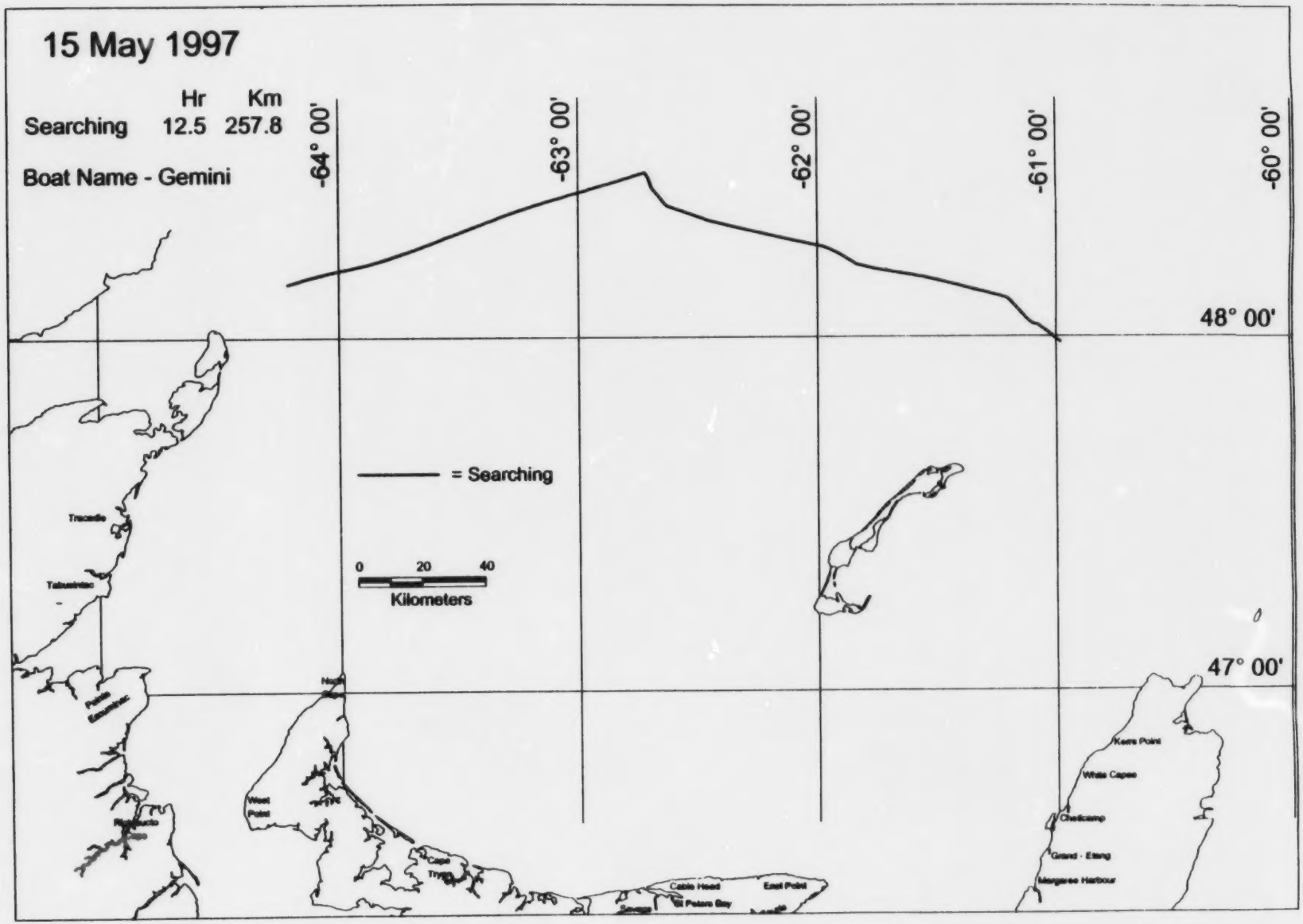

24 April 1997
Hr Km
Searching 11.4 117.8
Traversing 5.8 122.4
Boat Name - Gemini
0 20 40
Kilometers
= Searching
= Traversing
-62° 40'
-62° 00'
-61° 20'
-60° 40'
-60° 00'
48° 00'
47° 20'
46° 40'
P.E.I.
Cape North
Dingwall
Kerrs Point
Neils Harbour
White Capes
Chéticamp
Cape Smoky
Grand-Etang
Cape Breton
St Anns Bay

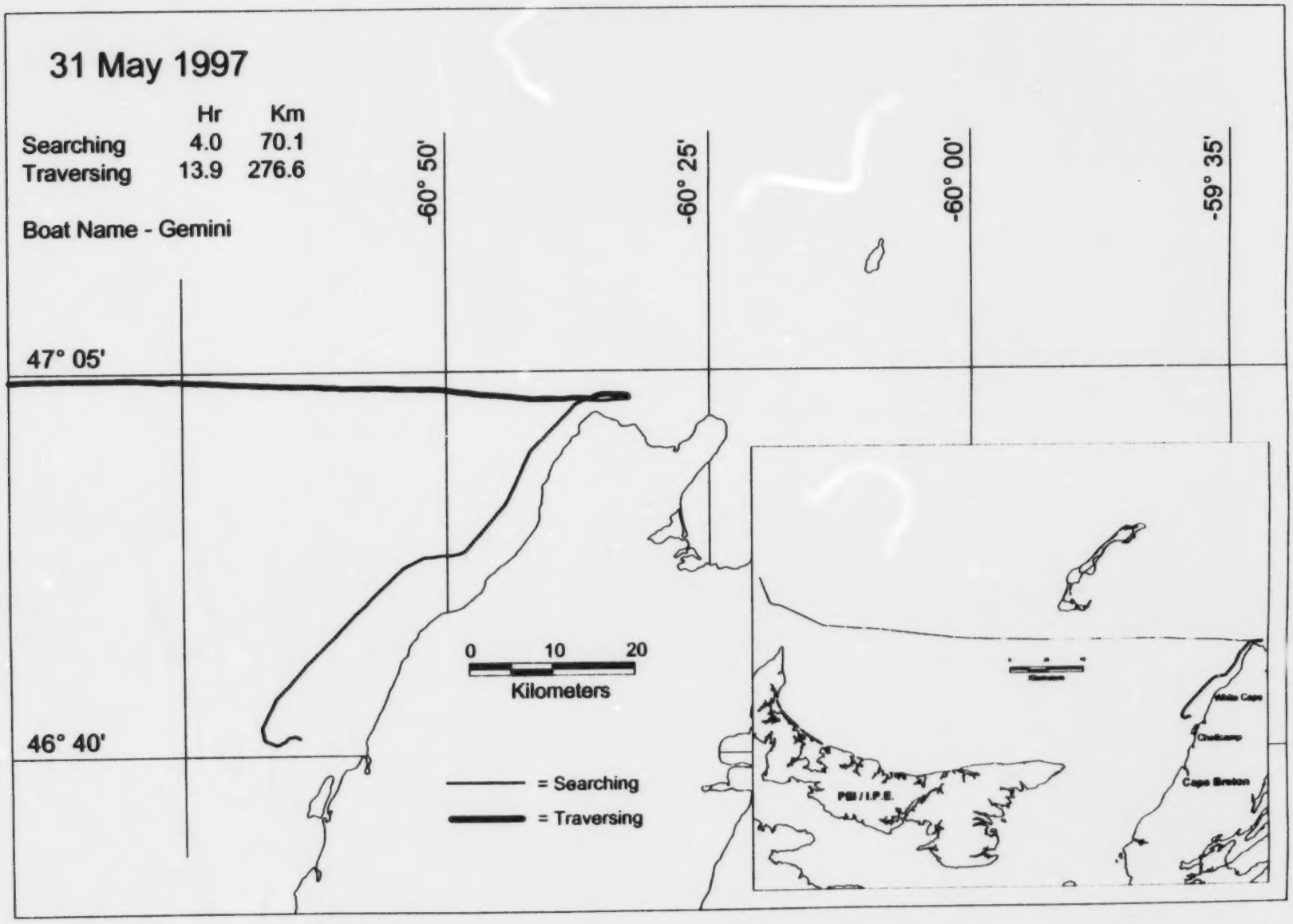

25 April 1997
Hr Km
Searching 1.9 32.1
Fishing 6.5 10.7
Boat Name - Gemini
= Searching
= Fishing
0 5 10
Kilometers
46° 40'
-61° 40'
-61° 20'
White Capes
Cheticamp

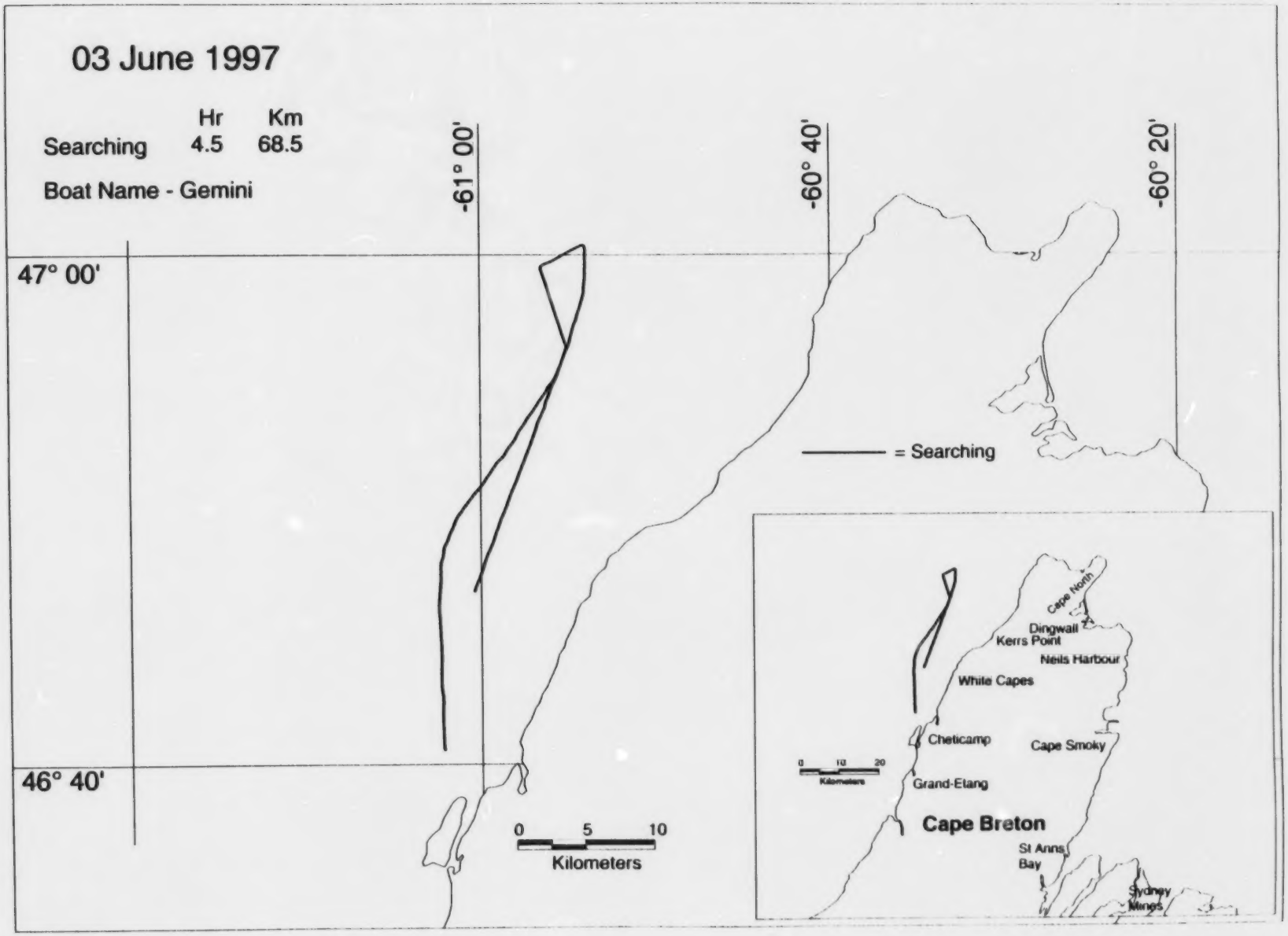

27 April 1997
Hr Km
Searching 19.1 329.2
Fishing 2.3 15.7
Boat Name - Gemini
0 15 30
Kilometers
= Searching
= Fishing
47° 30'
47° 00'
46° 45'
-61° 45'
-61° 30'
-61° 15'
-60° 15'
-60° 00'
-59° 45'
-59° 30'
Neils Harbour
Cheticamp
Cape Smoky

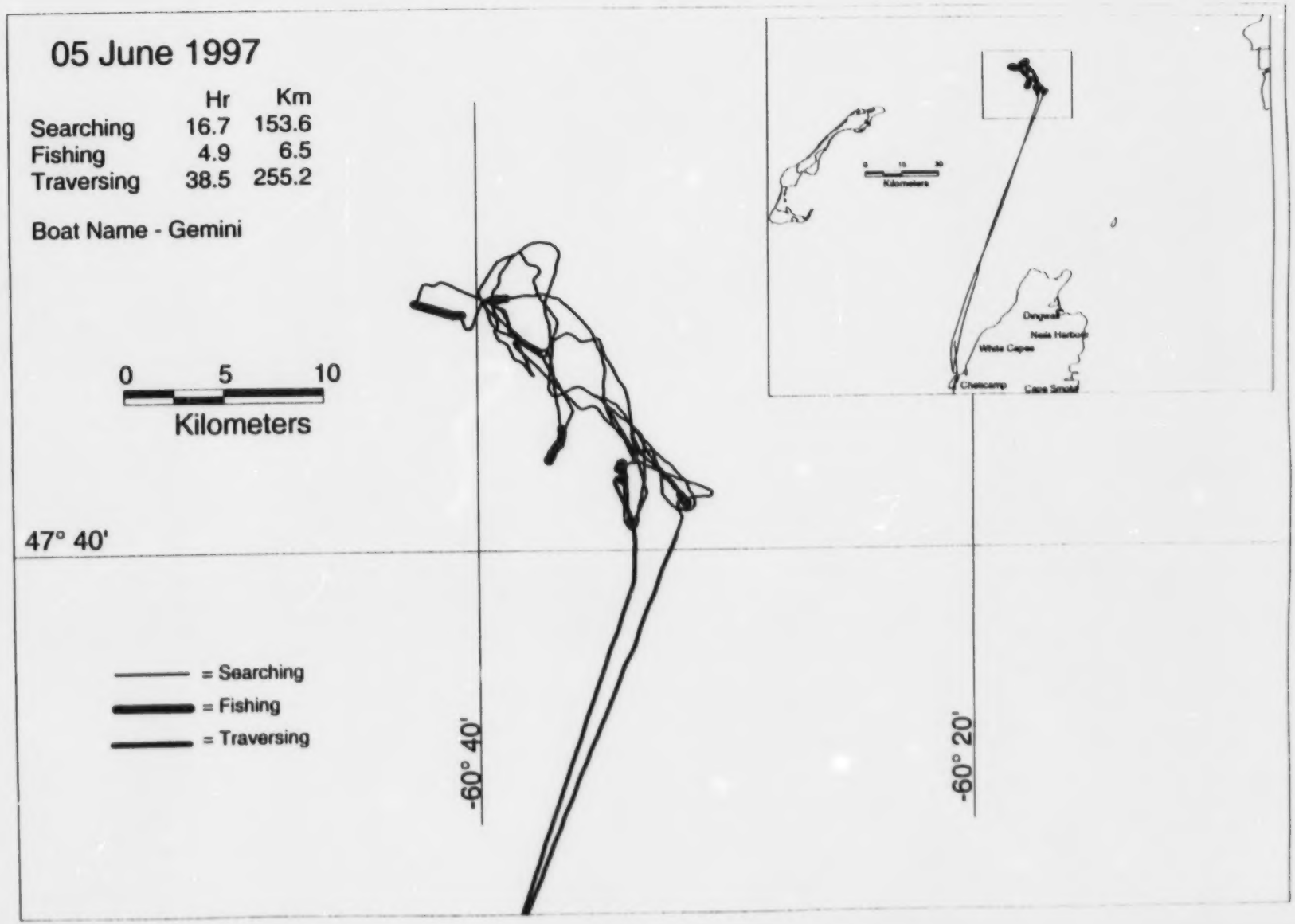

09 May 1997
Hr Km
Searching 16.9 259.6
Fishing 5.0 6.0
Boat Name - Gemini
0 10 20
Kilometers
= Searching
= Fishing
Cape North
Dingwall
Kerrs Point
Neils Harbour
White Capes
Cheticamp
Cape Smoky
Cape Breton
Grand-Etang
47 00'
46 30'
60 30'

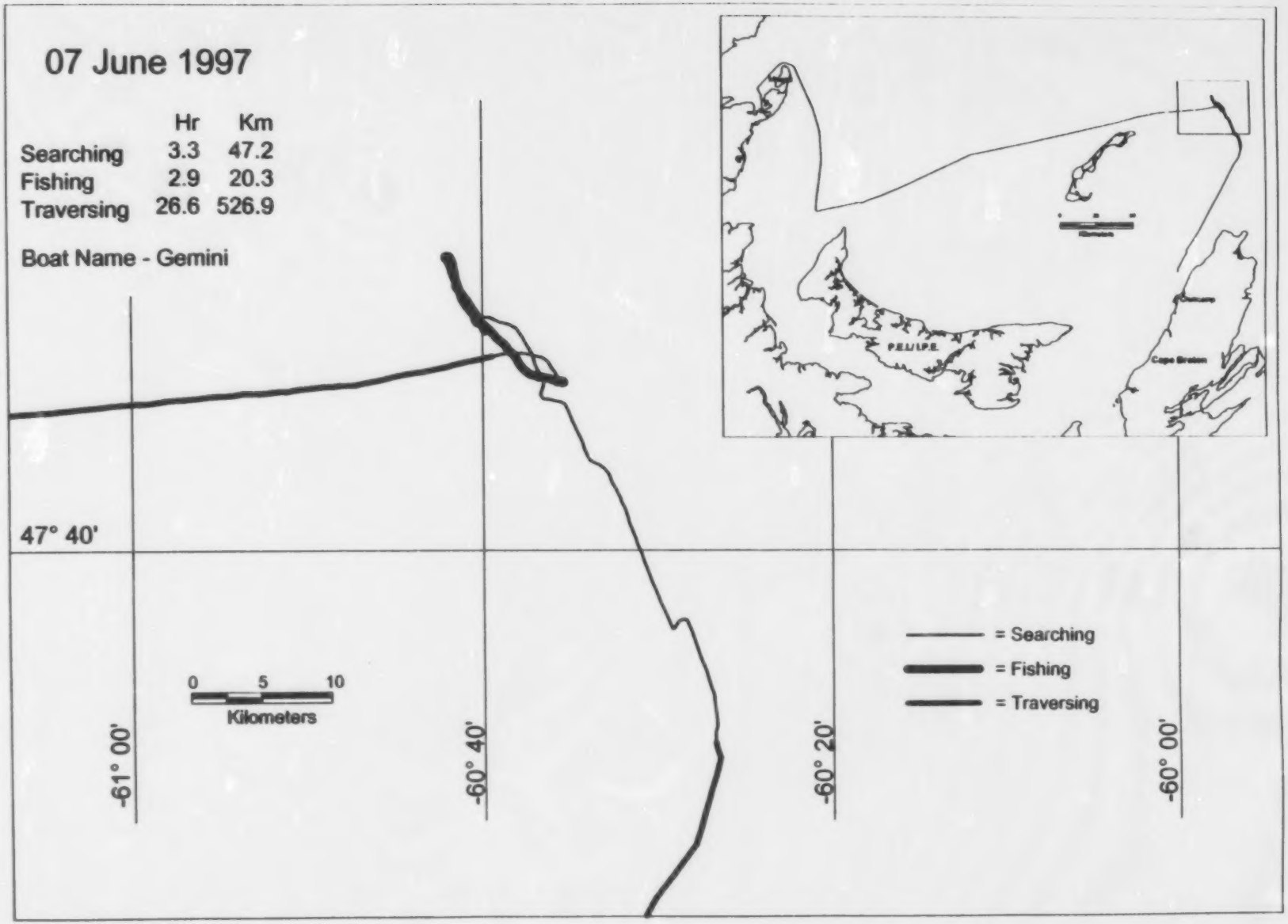

11 May 1997
= Searching
= Traversing
Hr Km
Searching 8.0 90.3
Traversing 26.1 496.3
Boat Name - Gemini
0 5 10
Kilometers
47° 30'
-61° 00'
-60° 30'
Que.
0 37.5 75
Kilometers
P.E.I.
N.B.
Cape Breton

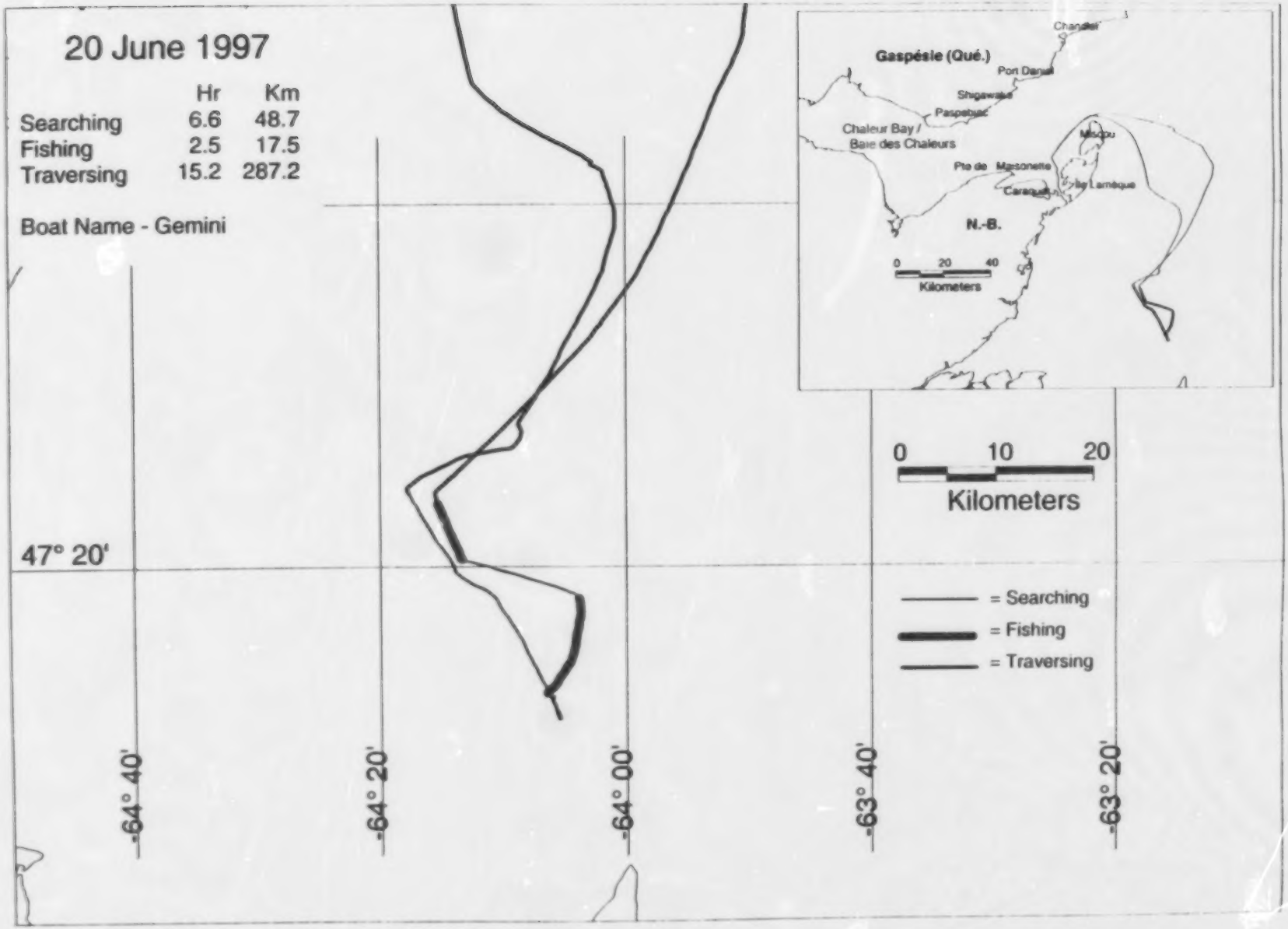

15 May 1997
Hr Km
Searching 12.5 257.8
Boat Name - Gemini
-64° 00'
-63° 00'
-62° 00'
-61° 00'
-60° 00'
48° 00'
47° 00'
= Searching
0 20 40
Kilometers
Tracadie
Tabusintac
Pointe Escuminac
West Point
Cape Tryon
Cable Head
St Peters Bay
East Point
Savage
Kerrs Point
White Capee
Cheticamp
Grand - Etang
Margaree Harbour

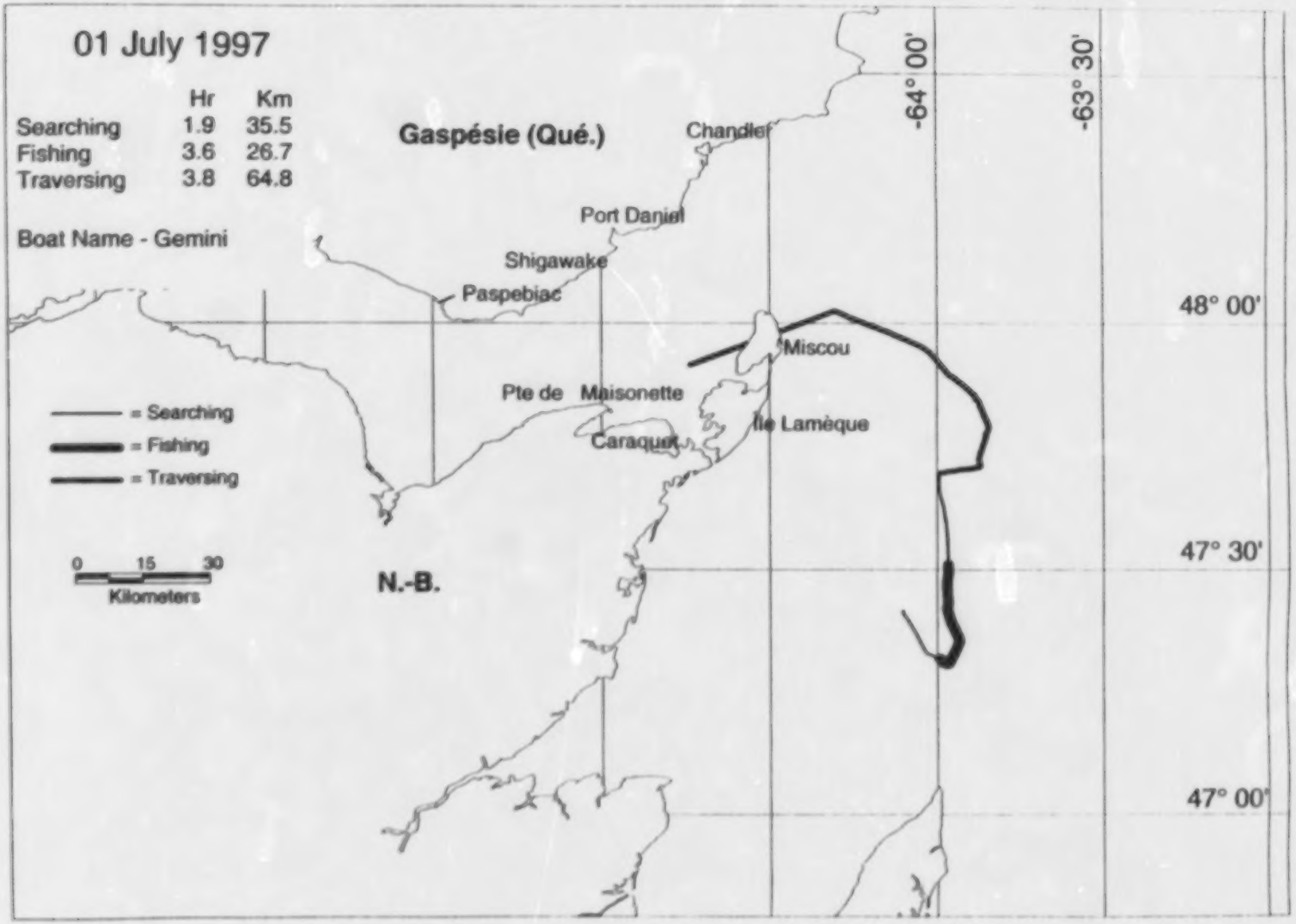

31 May 1997
Hr Km
Searching 4.0 70.1
Traversing 13.9 276.6
Boat Name - Gemini
-60° 50'
-60° 25'
-60° 00'
-59° 35'
47° 05'
46° 40'
0 10 20
Kilometers
= Searching
= Traversing
PEI / I.P.E.
Cape Breton

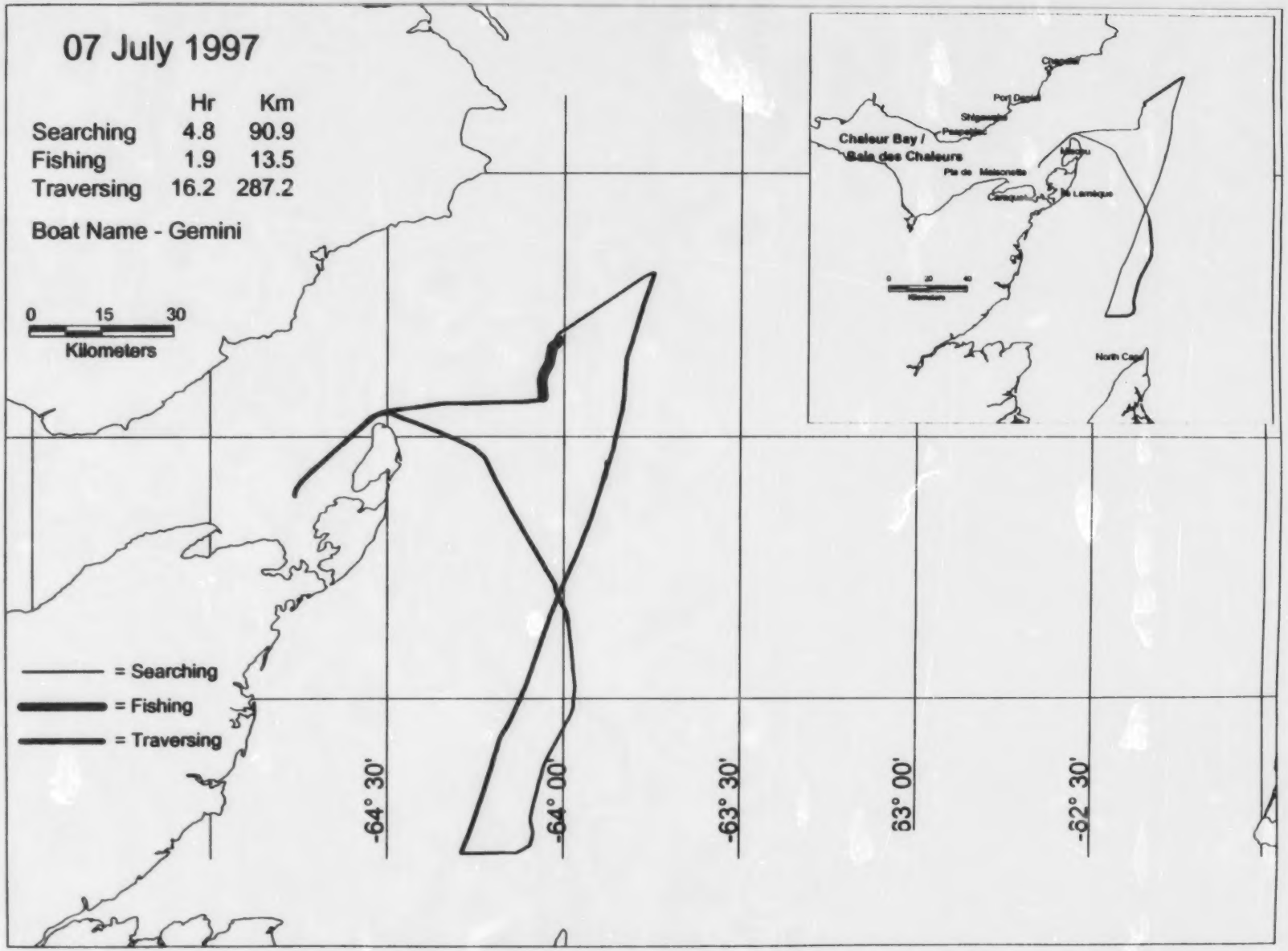

03 June 1997
Hr Km
Searching 4.5 68.5
Boat Name - Gemini
-61° 00'
-60° 40'
-60° 20'
47° 00'
46° 40'
= Searching
0 5 10
Kilometers
Cape North
Dingwall
Kerrs Point
Neils Harbour
White Capes
Cheticamp
Cape Smoky
Grand-Etang
Cape Breton
St Anns Bay
Sydney Mines

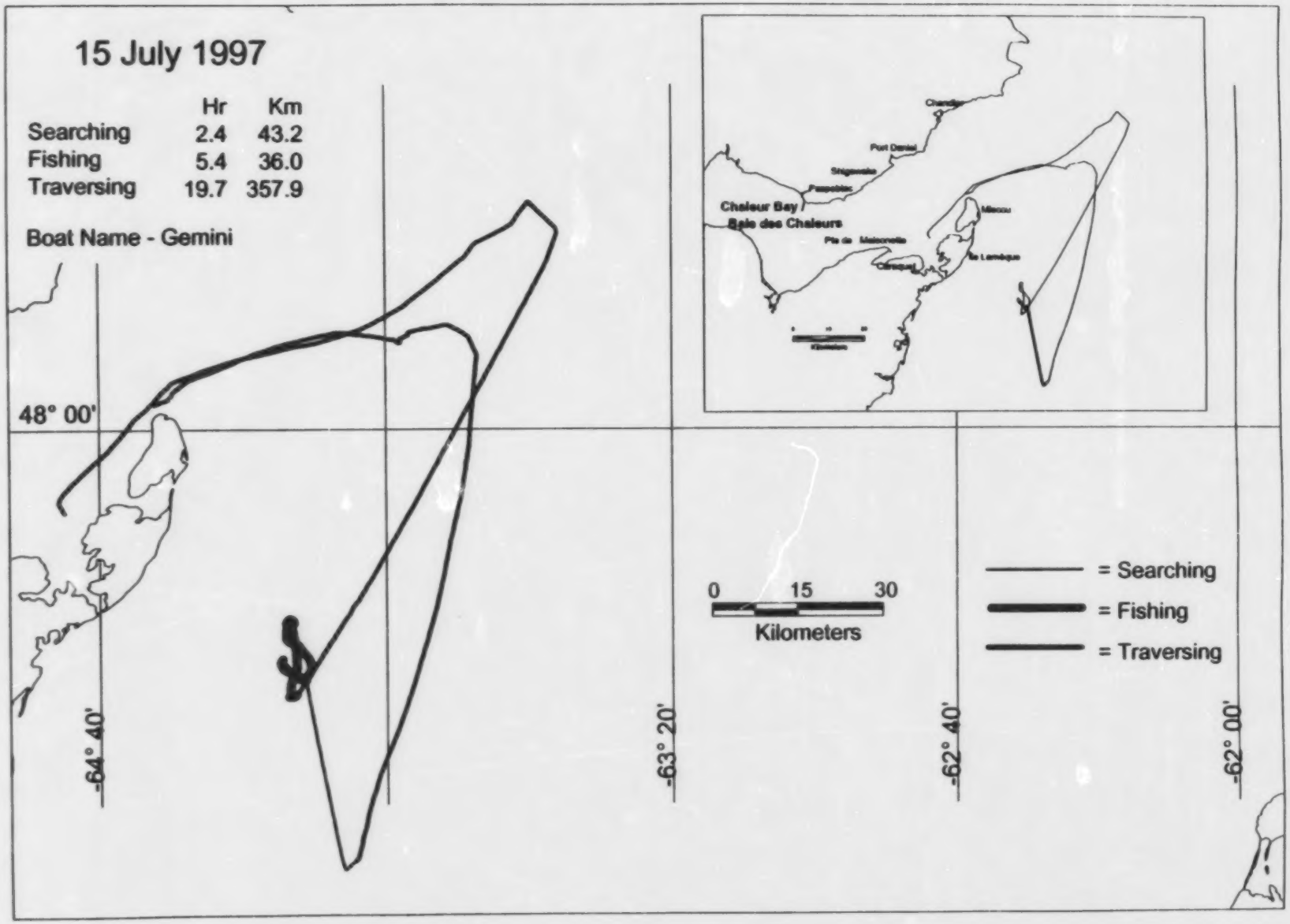

05 June 1997
Hr Km
Searching 16.7 153.6
Fishing 4.9 6.5
Traversing 38.5 255.2
Boat Name - Gemini
0 5 10
Kilometers
47° 40'
= Searching
= Fishing
= Traversing
-60° 40'
-60° 20'
Kilometers
Dingwall
Neils Harbour
White Capes
Chelicamp
Cape Smoky

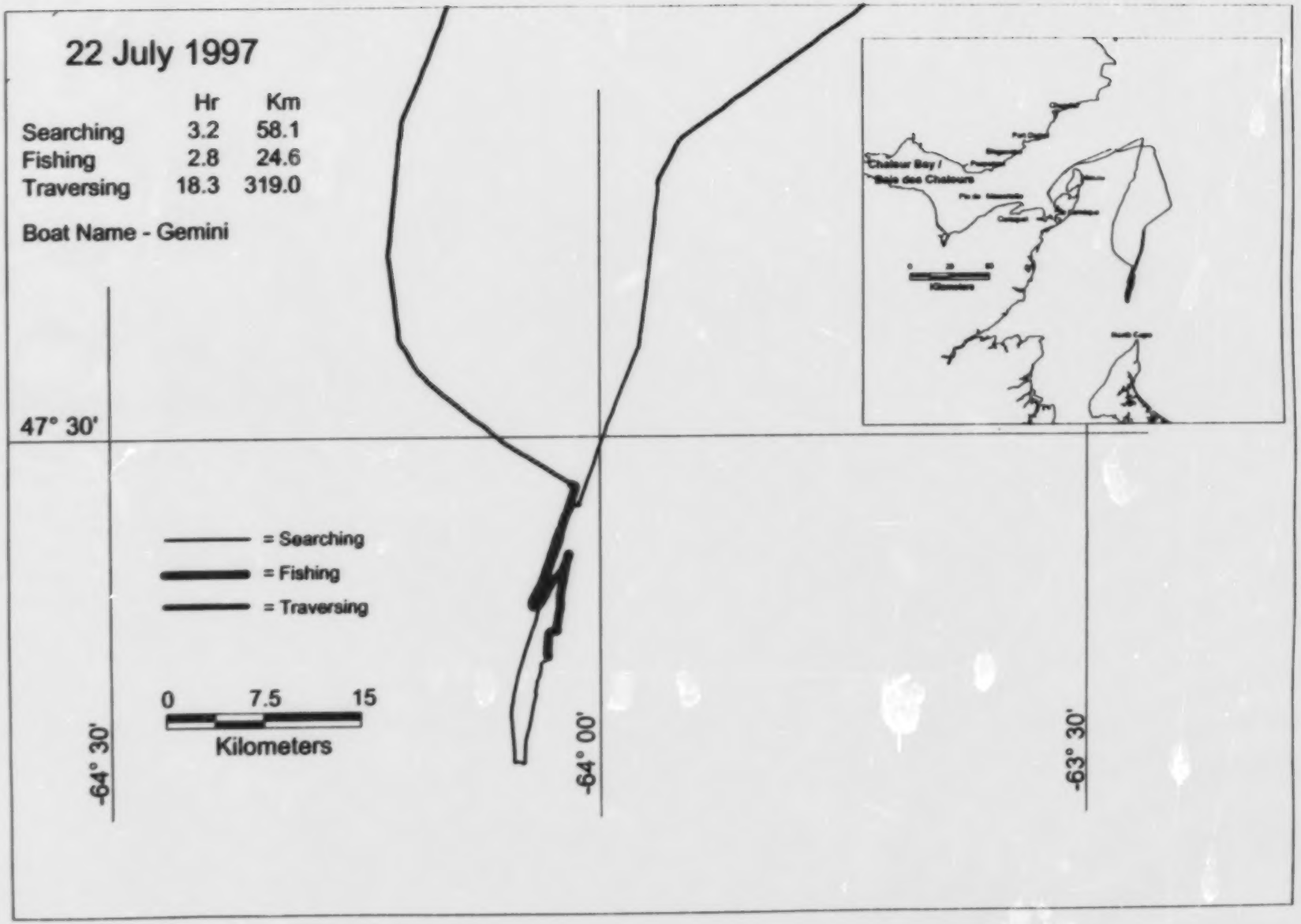

07 June 1997
Hr Km
Searching 3.3 47.2
Fishing 2.9 20.3
Traversing 26.6 526.9
Boat Name - Gemini
47° 40'
-61° 00'
-60° 40'
-60° 20'
-60° 00'
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
PELIPE

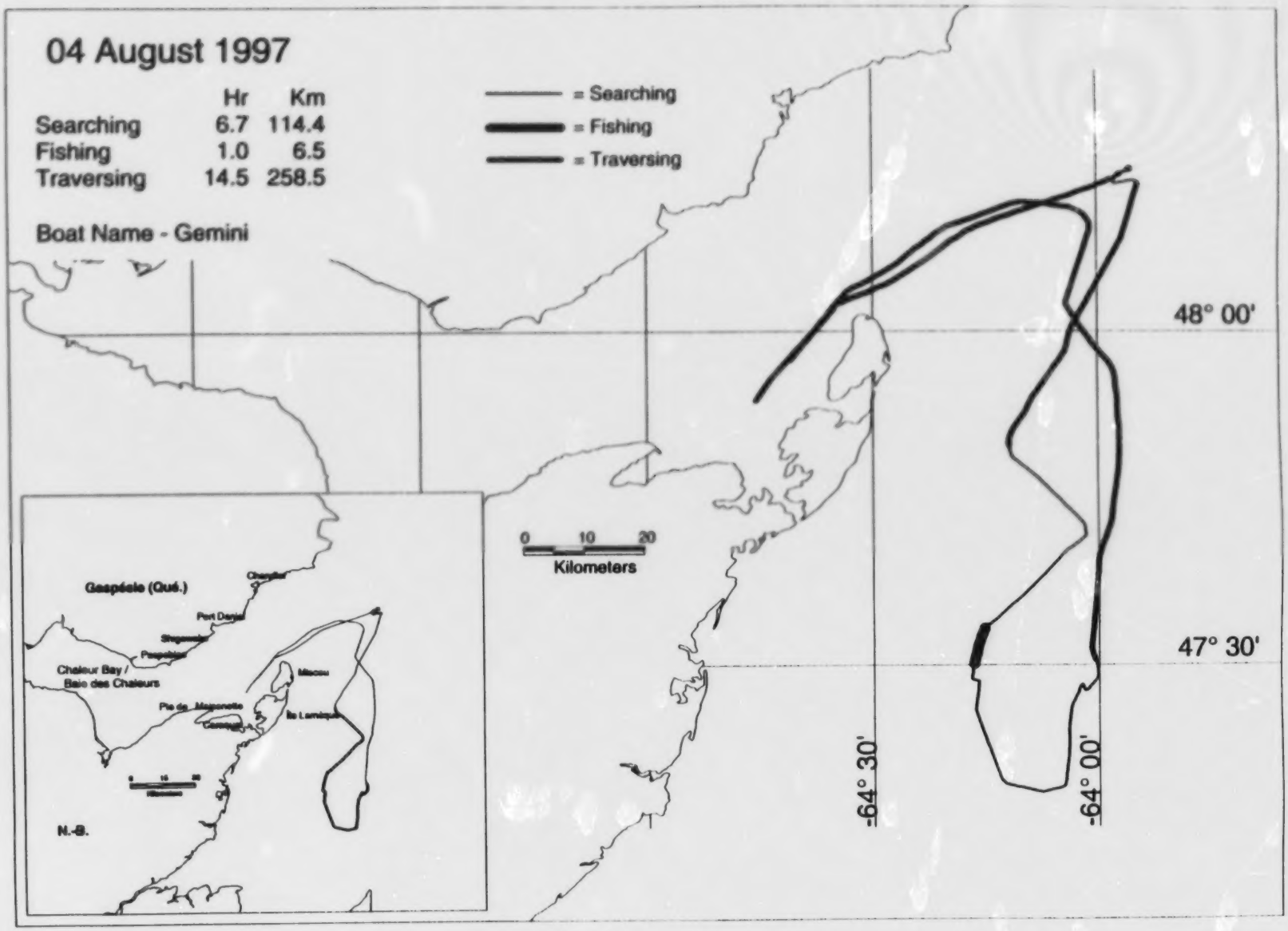

20 June 1997
Hr Km
Searching 6.6 48.7
Fishing 2.5 17.5
Traversing 15.2 287.2
Boat Name - Gemini
47° 20'
-64° 40'
-64° 20'
-64° 00'
-63° 40'
-63° 20'
Gaspésie (Qué.)
Chaleur Bay / Baie des Chaleurs
N.-B.
0 20 40
Kilometers
0 10 20
Kilometers
= Searching
= Fishing
= Traversing

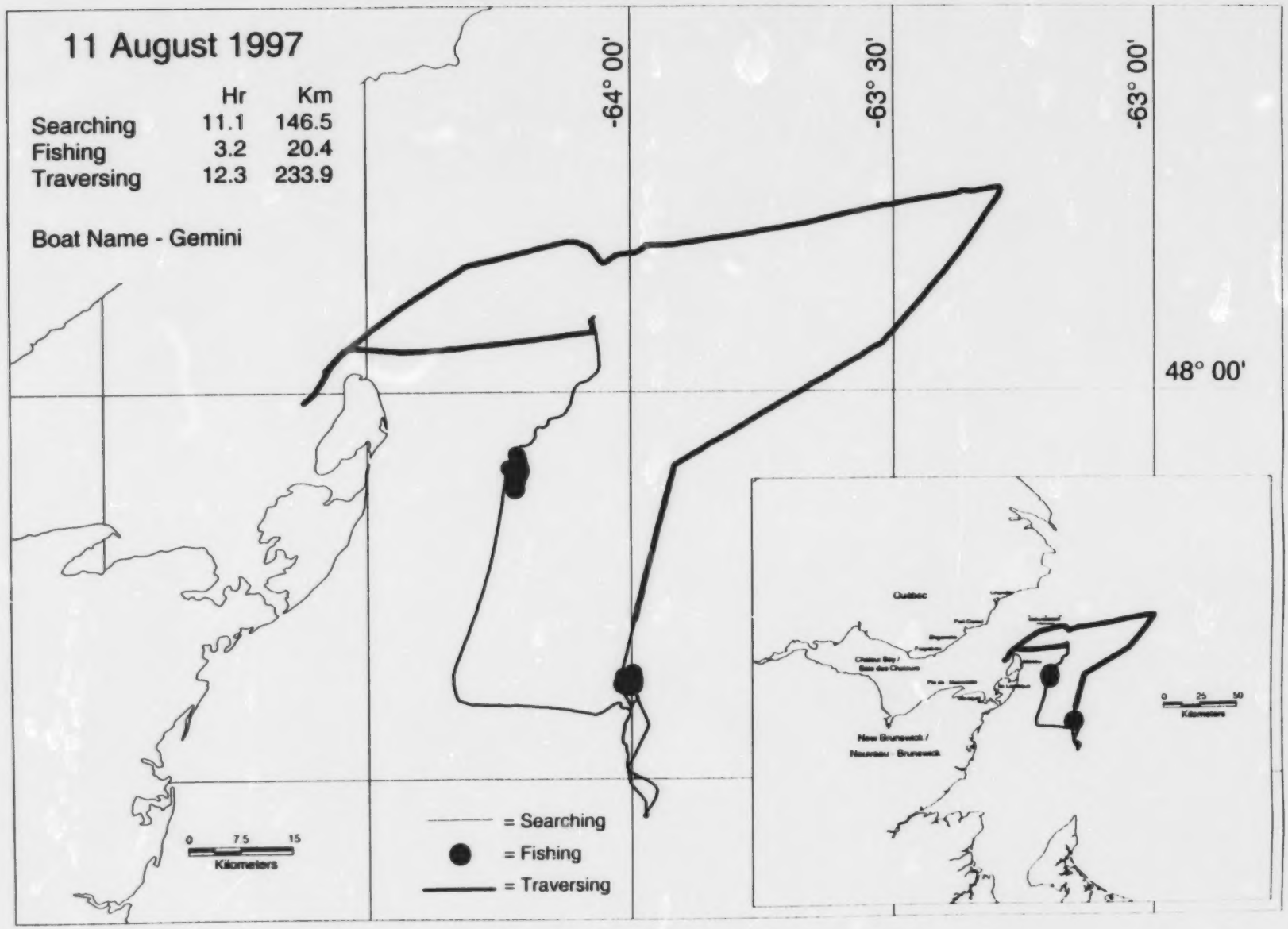

01 July 1997
Hr Km
Searching 1.9 35.5
Fishing 3.6 26.7
Traversing 3.8 64.8
Boat Name - Gemini
Gaspésie (Qué.)
Chandler
Port Daniel
Shigawake
Paspebiac
Miscou
Pte de Maisonette
Ile Lamèque
Caraquet
= Searching
= Fishing
= Traversing
0 15 30
Kilometers
N.-B.
-64° 00'
-63° 30'
48° 00'
47° 30'
47° 00'

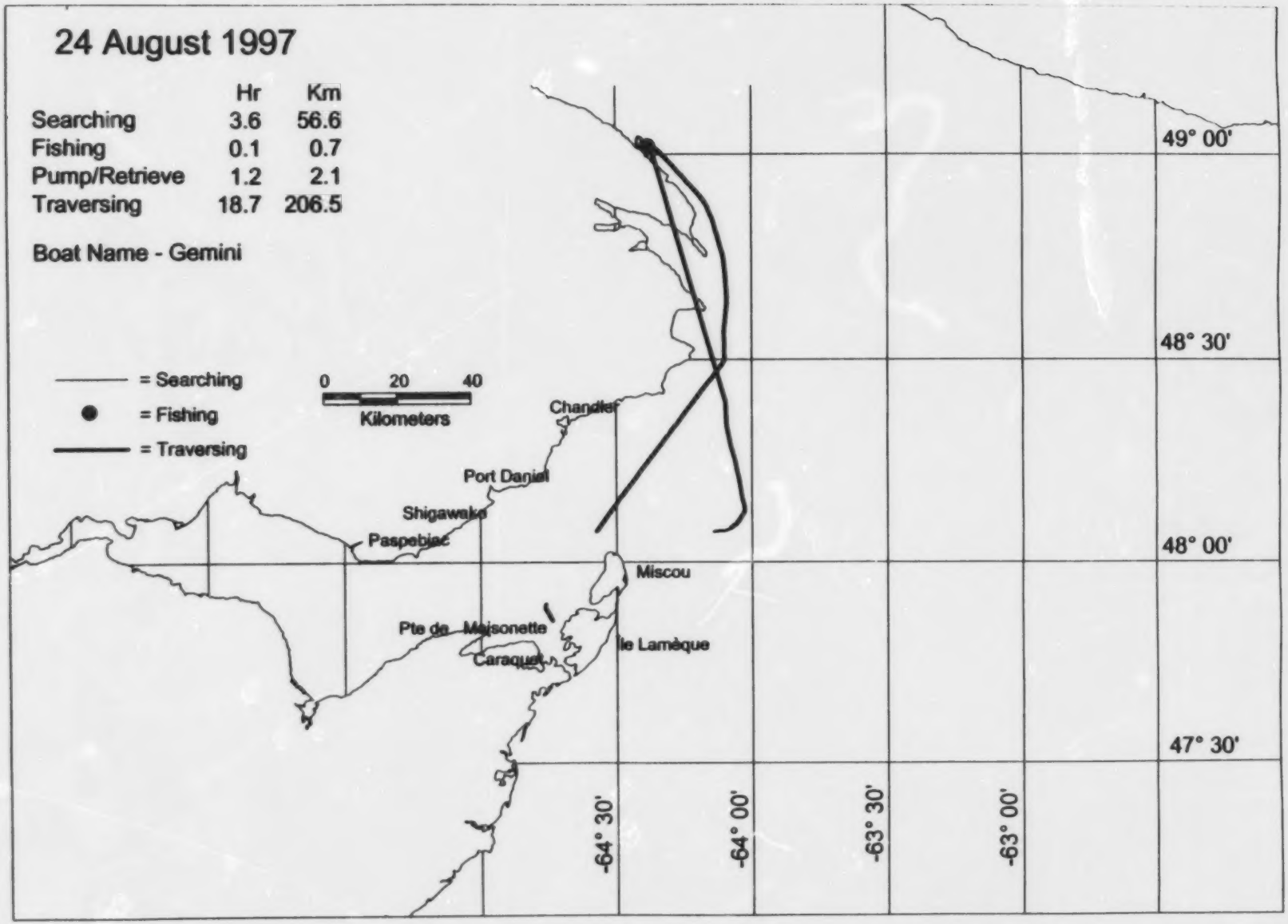

07 July 1997
Hr Km
Searching 4.8 90.9
Fishing 1.9 13.5
Traversing 16.2 287.2
Boat Name - Gemini
0 15 30
Kilometers
= Searching
= Fishing
= Traversing
-64° 30'
-64° 00'
-63° 30'
63° 00'
-62° 30'
Chaleur Bay /
Baie des Chaleurs
Port Daniel
Pte de Maisonette
Caraquet
Miscou
Le Lamèque
North Cape

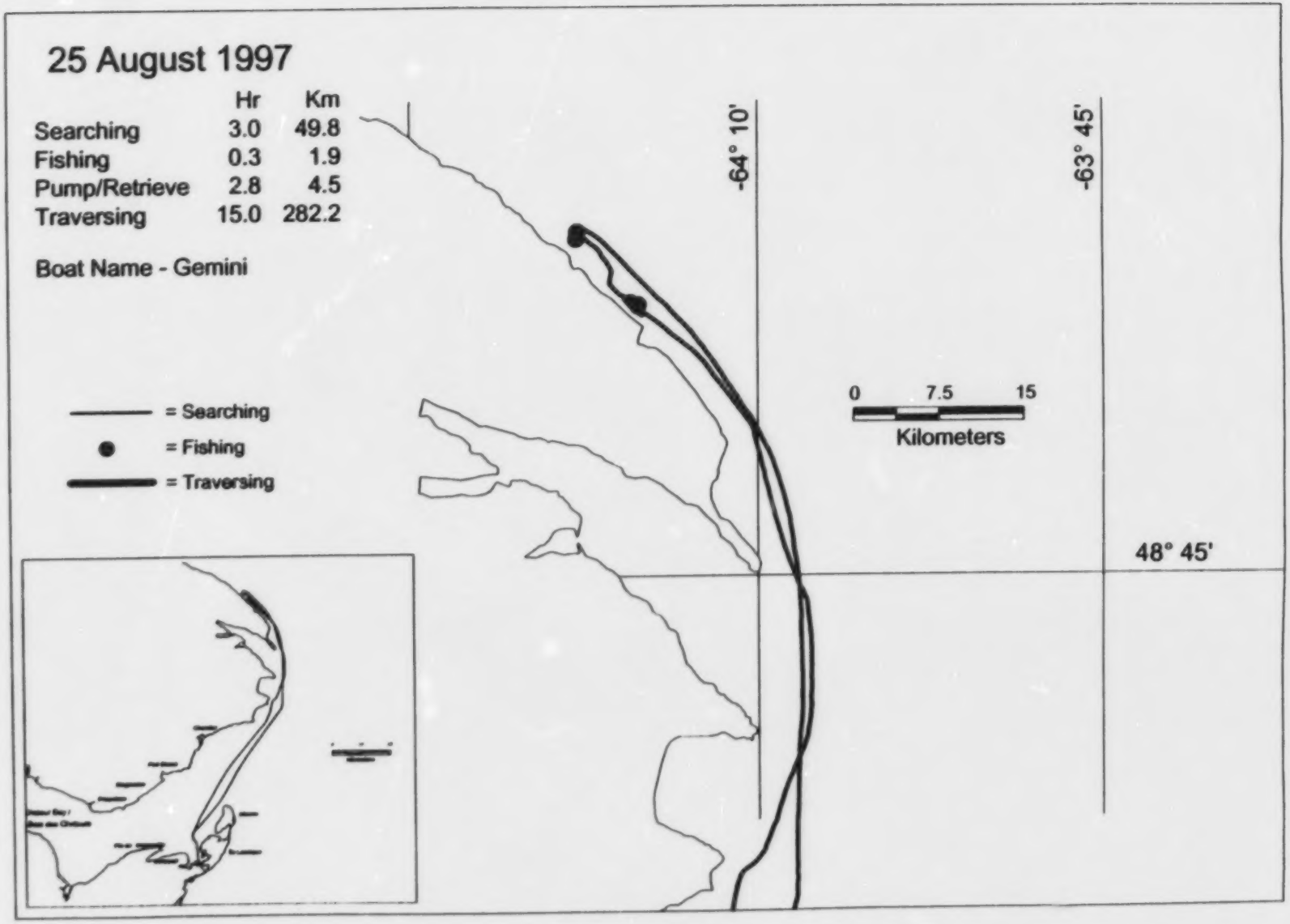

15 July 1997
Hr Km
Searching 2.4 43.2
Fishing 5.4 36.0
Traversing 19.7 357.9
Boat Name - Gemini
Chaleur Bay
Baie des Chaleurs
48° 00'
-64° 40'
-63° 20'
-62° 40'
-62° 00'
0 15 30
Kilometers
= Searching
= Fishing
= Traversing

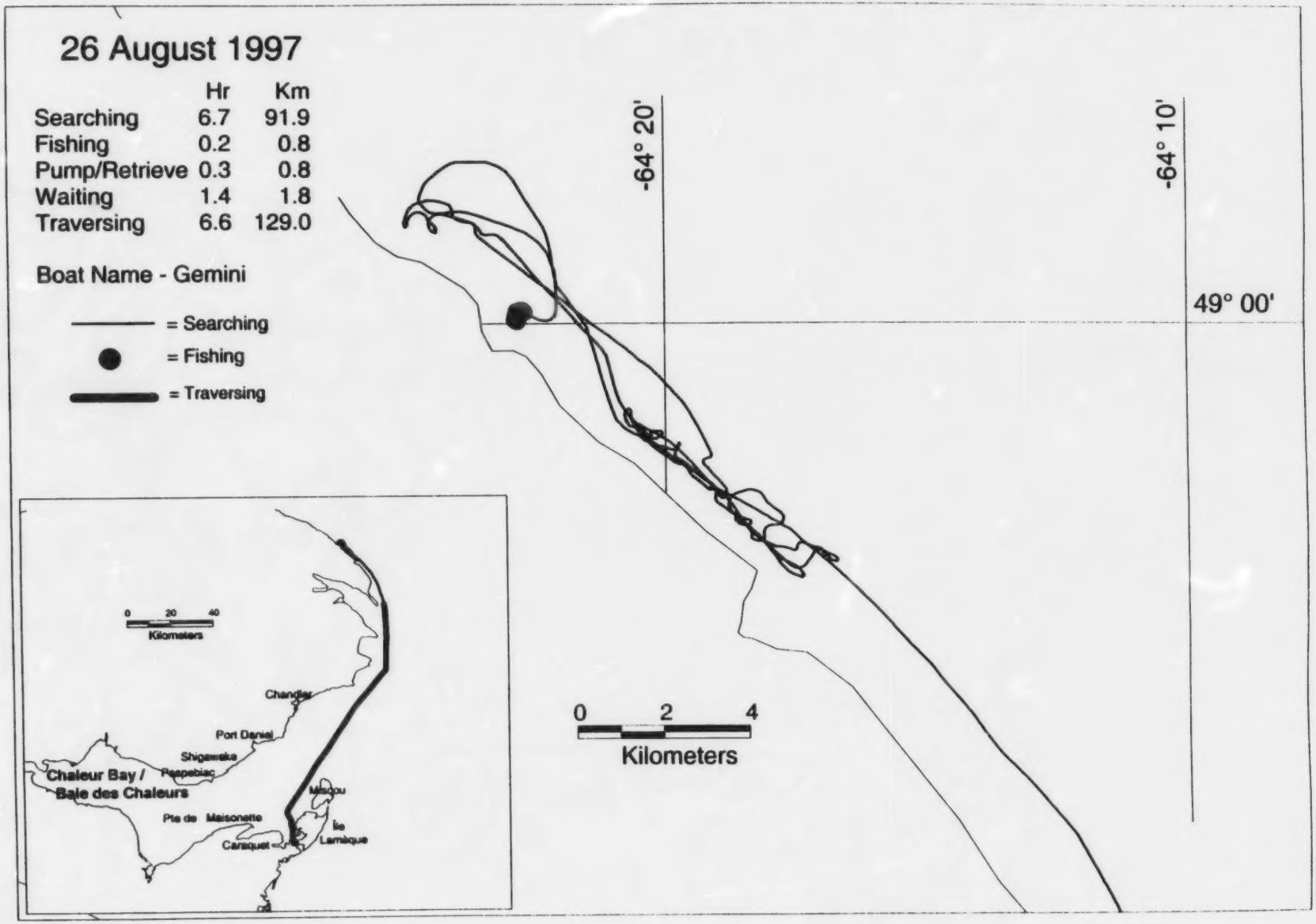

22 July 1997
Hr Km
Searching 3.2 58.1
Fishing 2.8 24.6
Traversing 18.3 319.0
Boat Name - Gemini
47° 30'
= Searching
= Fishing
= Traversing
0 7.5 15
Kilometers
-64° 30'
-64° 00'
-63° 30'
Chaleur Bay /
Baie des Chaleurs

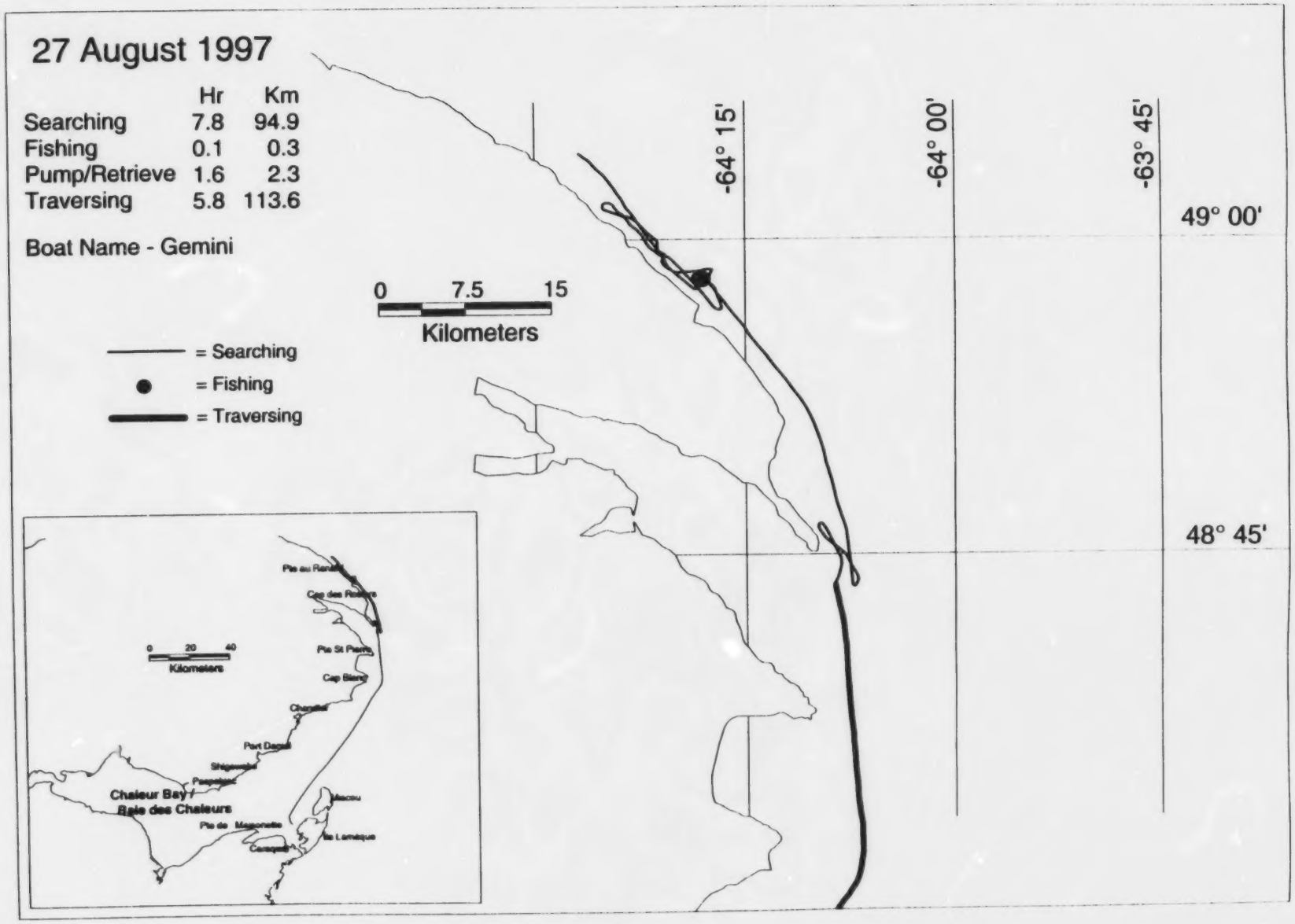

04 August 1997
Hr Km
Searching 6.7 114.4
Fishing 1.0 6.5
Traversing 14.5 258.5
Boat Name - Gemini
= Searching
= Fishing
= Traversing
48° 00'
47° 30'
-64° 30'
-64° 00'
0 10 20
Kilometers
Gaspésie (Qué.)
Chaleur Bay /
Baie des Chaleurs
Miscou
N.-B.

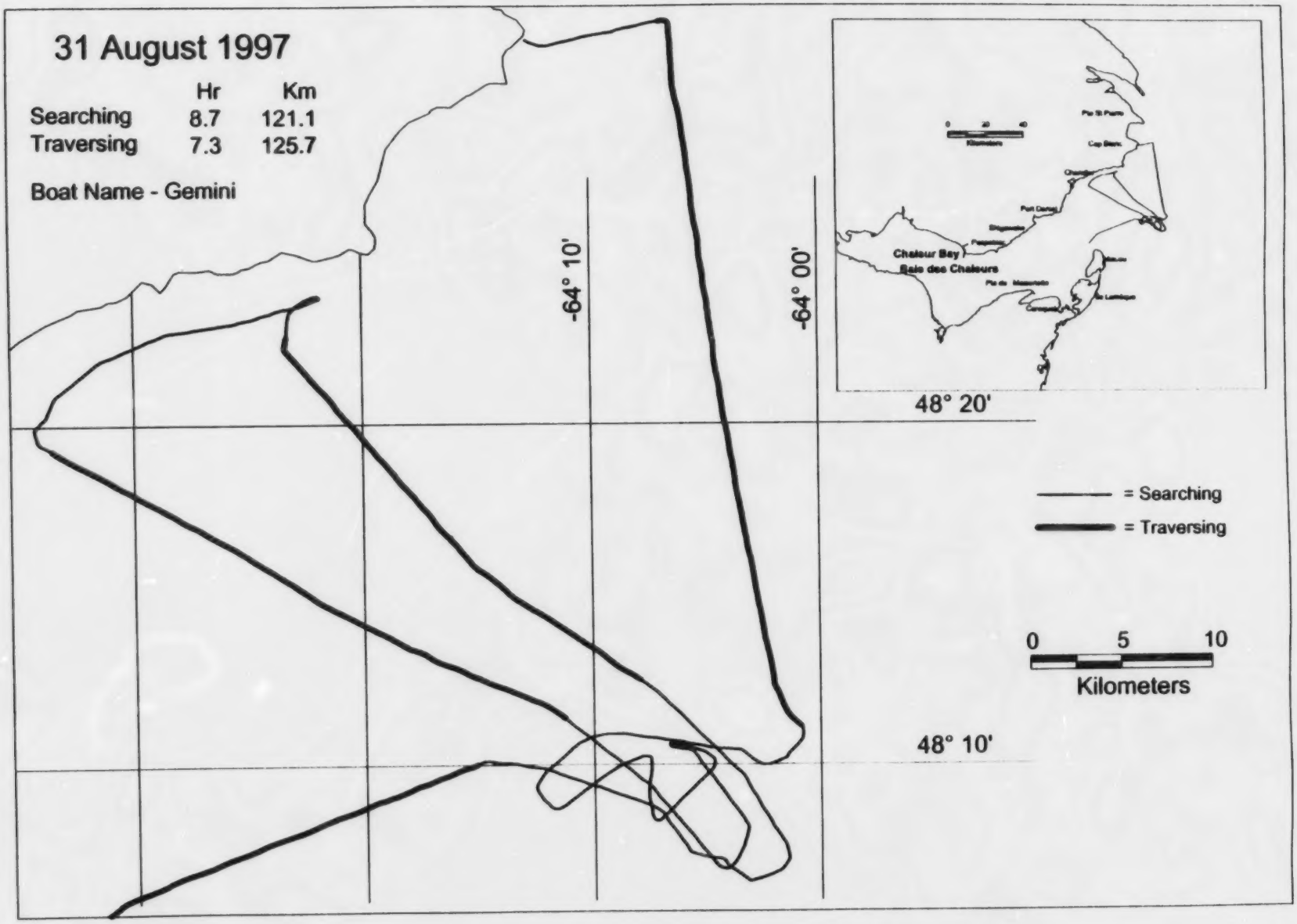

11 August 1997
Hr Km
Searching 11.1 146.5
Fishing 3.2 20.4
Traversing 12.3 233.9
Boat Name - Gemini
-64° 00'
-63° 30'
-63° 00'
48° 00'
0 7.5 15
Kilometers
= Searching
= Fishing
= Traversing
Quebec
New Brunswick / Nouveau - Brunswick
0 25 50
Kilometers

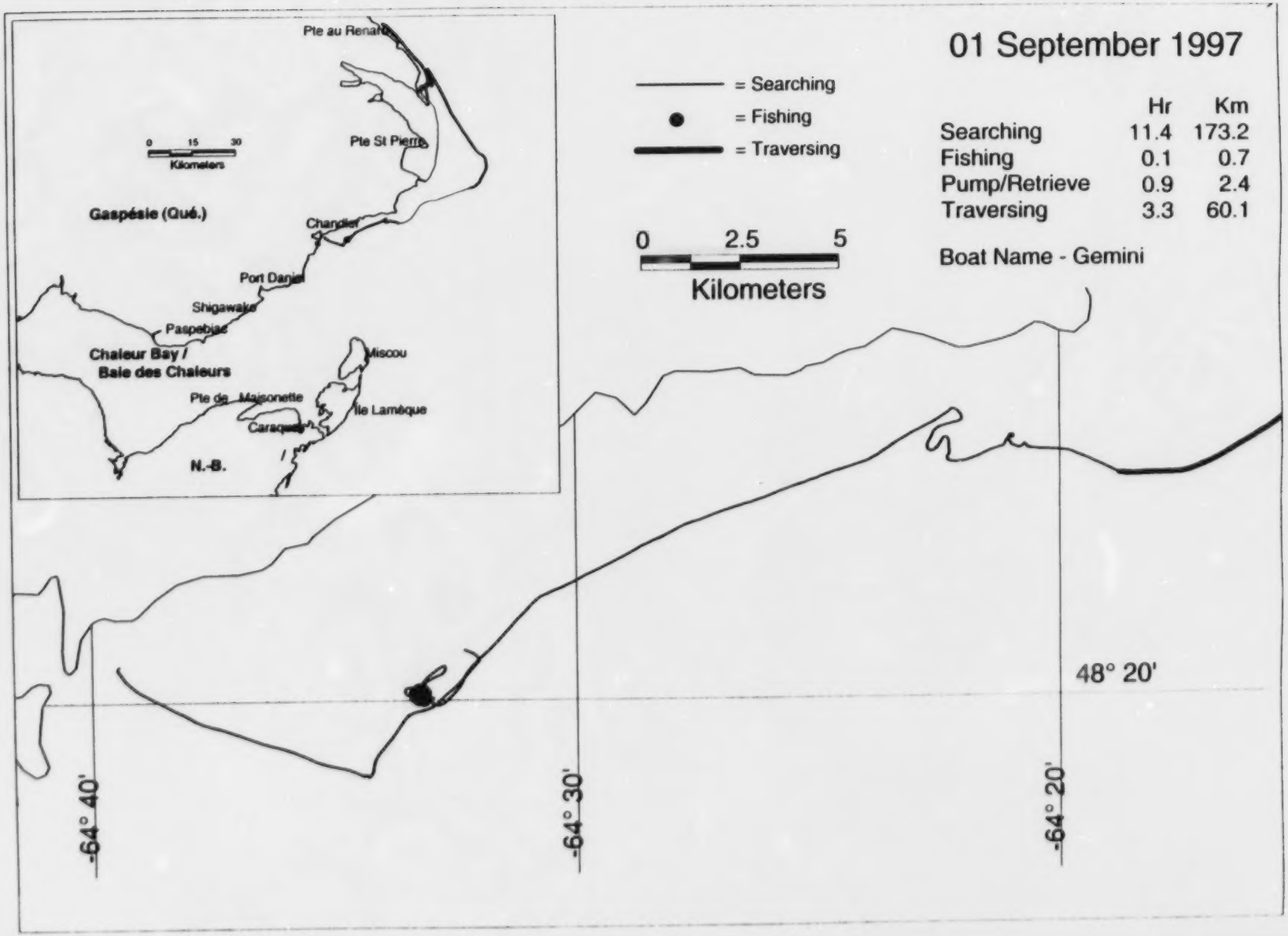

24 August 1997
Hr Km
Searching 3.6 56.6
Fishing 0.1 0.7
Pump/Retrieve 1.2 2.1
Traversing 18.7 206.5
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 20 40
Kilometers
Chandler
Port Daniel
Shigawake
Paspebiac
Miscou
Pte de Maisonette
Caraquet
Ile Lamèque
49° 00'
48° 30'
48° 00'
47° 30'
-64° 30'
-64° 00'
-63° 30'
-63° 00'

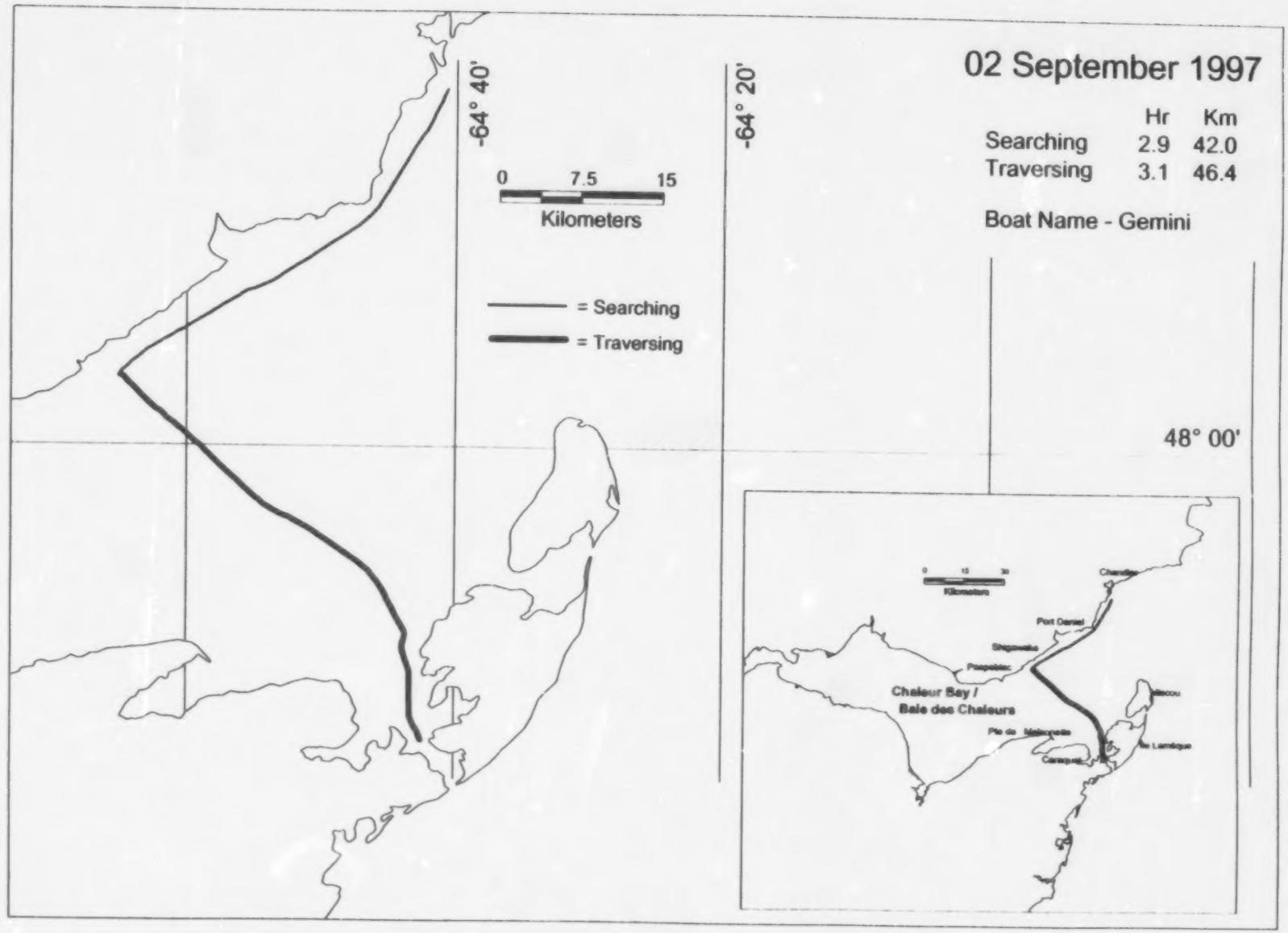

25 August 1997
Hr Km
Searching 3.0 49.8
Fishing 0.3 1.9
Pump/Retrieve 2.8 4.5
Traversing 15.0 282.2
Boat Name - Gemini
= Searching
= Fishing
= Traversing
-64° 10'
-63° 45'
48° 45'
0 7.5 15
Kilometers

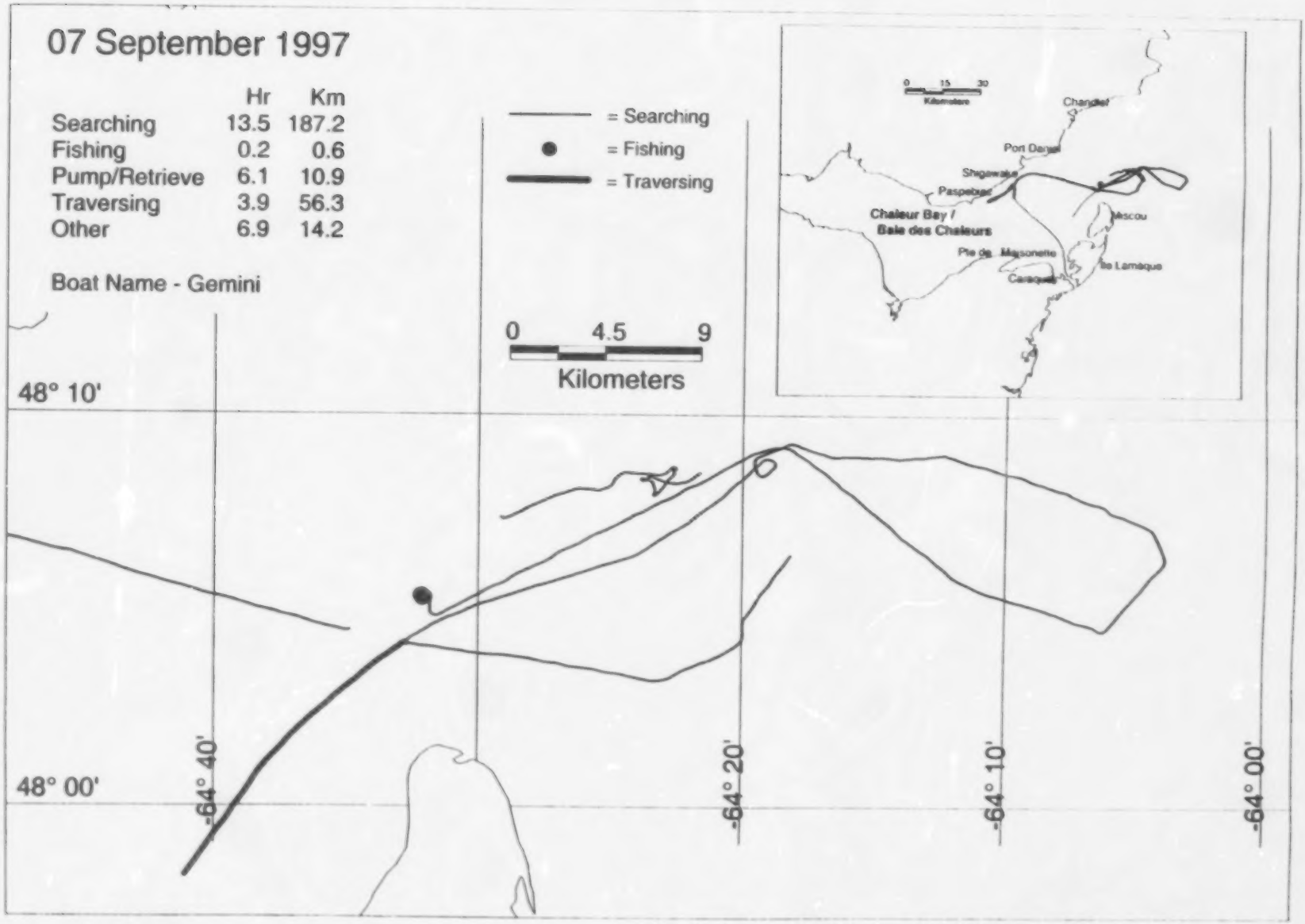

26 August 1997
Hr Km
Searching 6.7 91.9
Fishing 0.2 0.8
Pump/Retrieve 0.3 0.8
Waiting 1.4 1.8
Traversing 6.6 129.0
Boat Name - Gemini
= Searching
= Fishing
= Traversing
-64° 20'
-64° 10'
49° 00'
0 2 4
Kilometers
0 20 40
Kilometers
Chandler
Port Daniel
Shigawake
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonette
Carsquet
Miscou
Île Lamèque

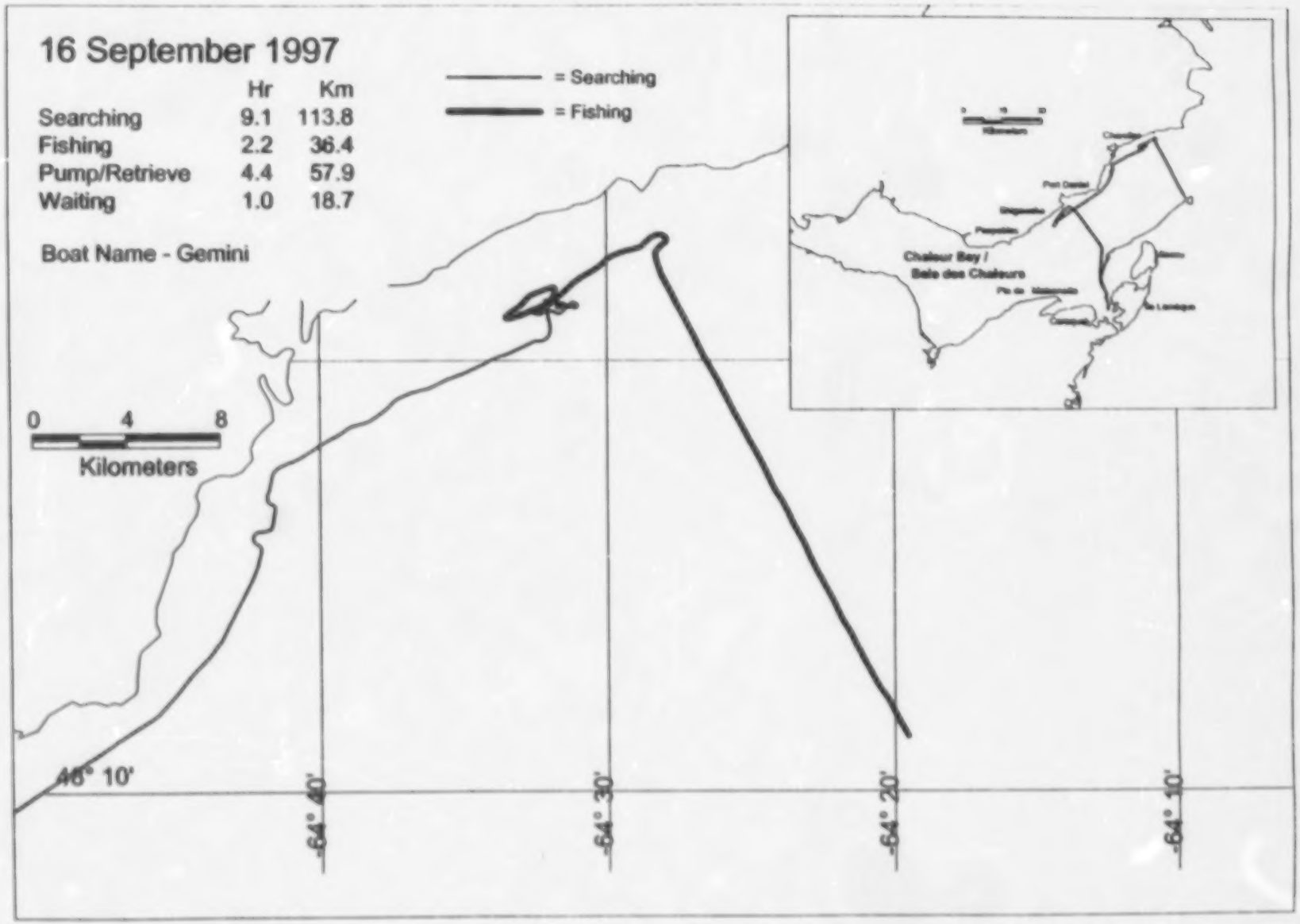

27 August 1997
Hr Km
Searching 7.8 94.9
Fishing 0.1 0.3
Pump/Retrieve 1.6 2.3
Traversing 5.8 113.6
Boat Name - Gemini
0 7.5 15
Kilometers
= Searching
= Fishing
= Traversing
-64° 15'
-64° 00'
-63° 45'
49° 00'
48° 45'
0 20 40
Kilometers
Chaleur Bay /
Baie des Chaleurs

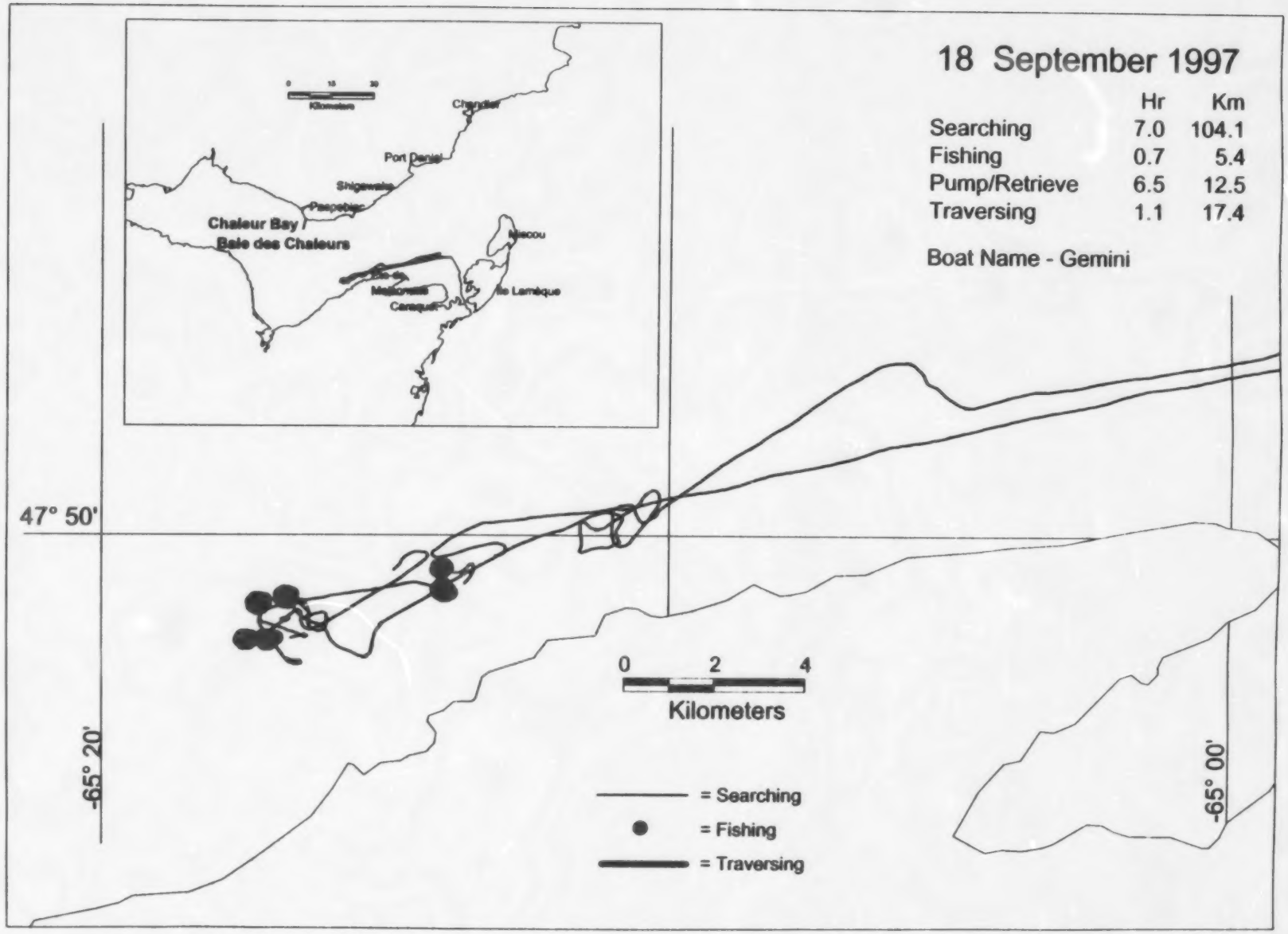

31 August 1997
Hr Km
Searching 8.7 121.1
Traversing 7.3 125.7
Boat Name - Gemini
-64° 10'
-64° 00'
48° 20'
48° 10'
Chaleur Bay
Baie des Chaleurs
= Searching
= Traversing
0 5 10
Kilometers

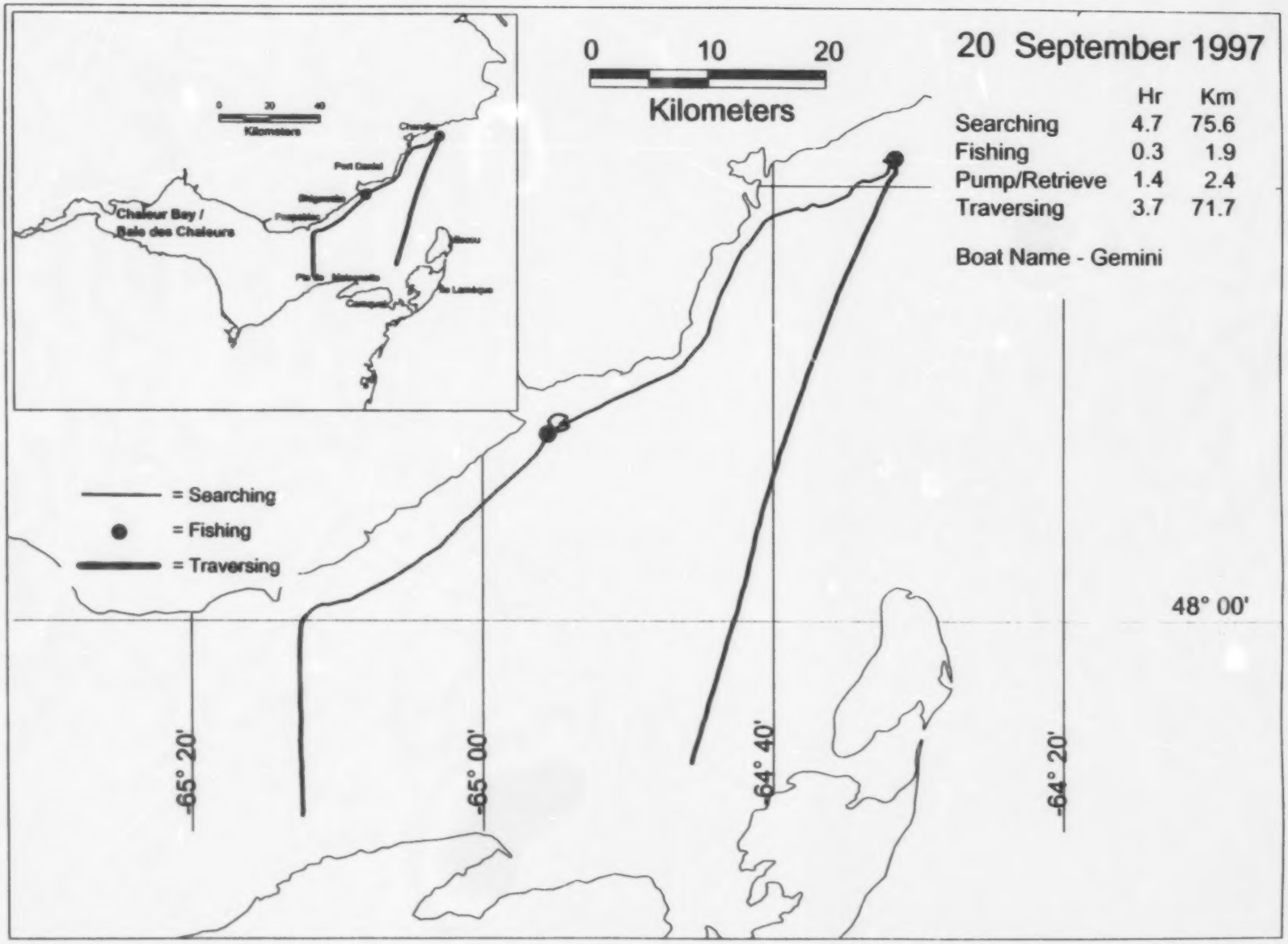

01 September 1997
= Searching
= Fishing
= Traversing
0 2.5 5
Kilometers
Hr Km
Searching 11.4 173.2
Fishing 0.1 0.7
Pump/Retrieve 0.9 2.4
Traversing 3.3 60.1
Boat Name - Gemini
Pte au Renard
Pte St Pierre
0 15 30
Kilometers
Gaspésie (Qué.)
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Miscou
Pte de Maisonnette
Ile Lamèque
Caraquet
N.-B.
48° 20'
-64° 40'
-64° 30'
-64° 20'

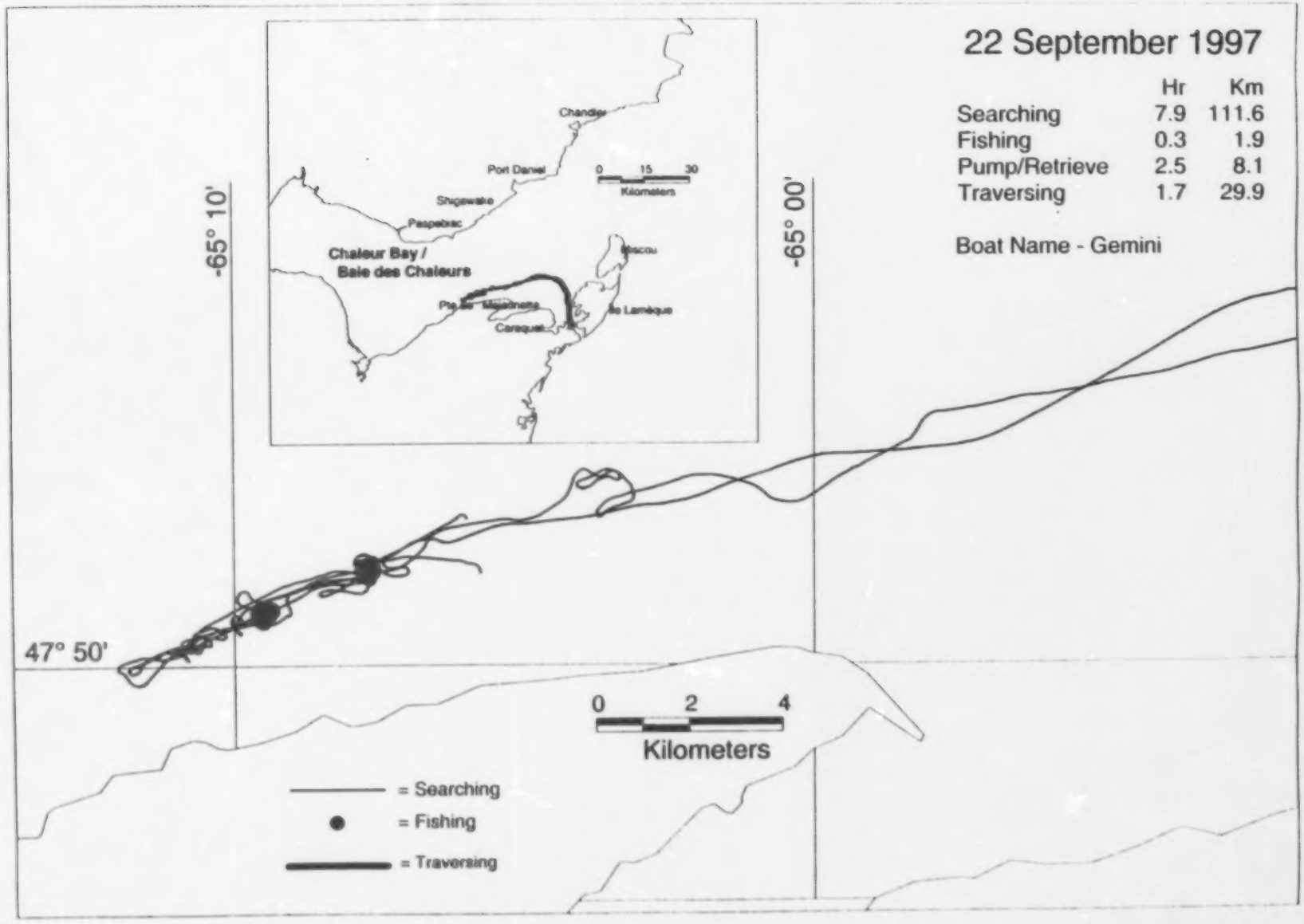

02 September 1997
Hr Km
Searching 2.9 42.0
Traversing 3.1 46.4
Boat Name - Gemini
-64° 40'
-64° 20'
48° 00'
0 7.5 15
Kilometers
= Searching
= Traversing
Chaleur Bay /
Baie des Chaleurs

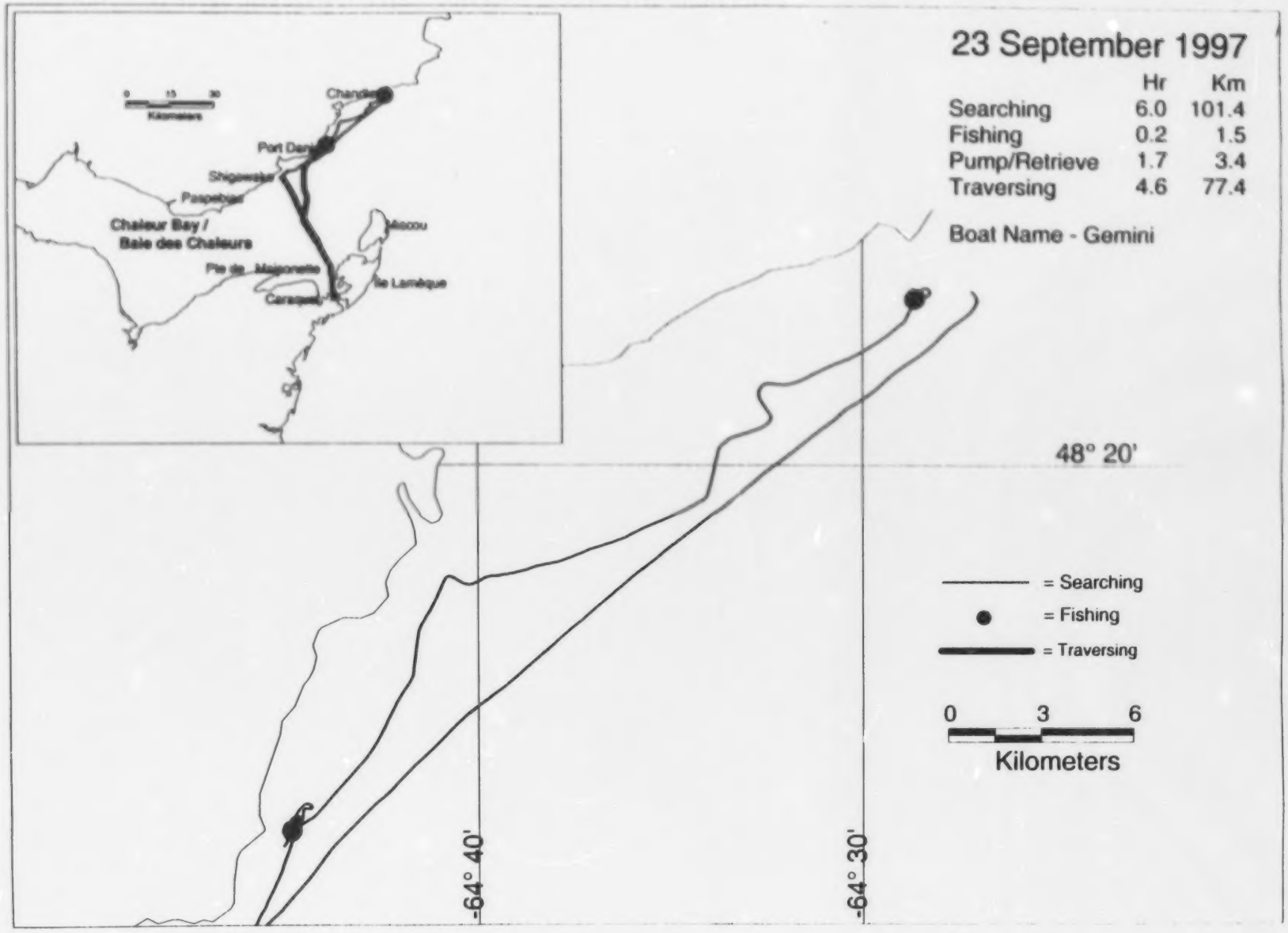

07 September 1997
Hr Km
Searching 13.5 187.2
Fishing 0.2 0.6
Pump/Retrieve 6.1 10.9
Traversing 3.9 56.3
Other 6.9 14.2
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 4.5 9
Kilometers
Chaleur Bay /
Baie des Chaleurs
48° 10'
48° 00'
-64° 40'
-64° 20'
-64° 10'
-64° 00'

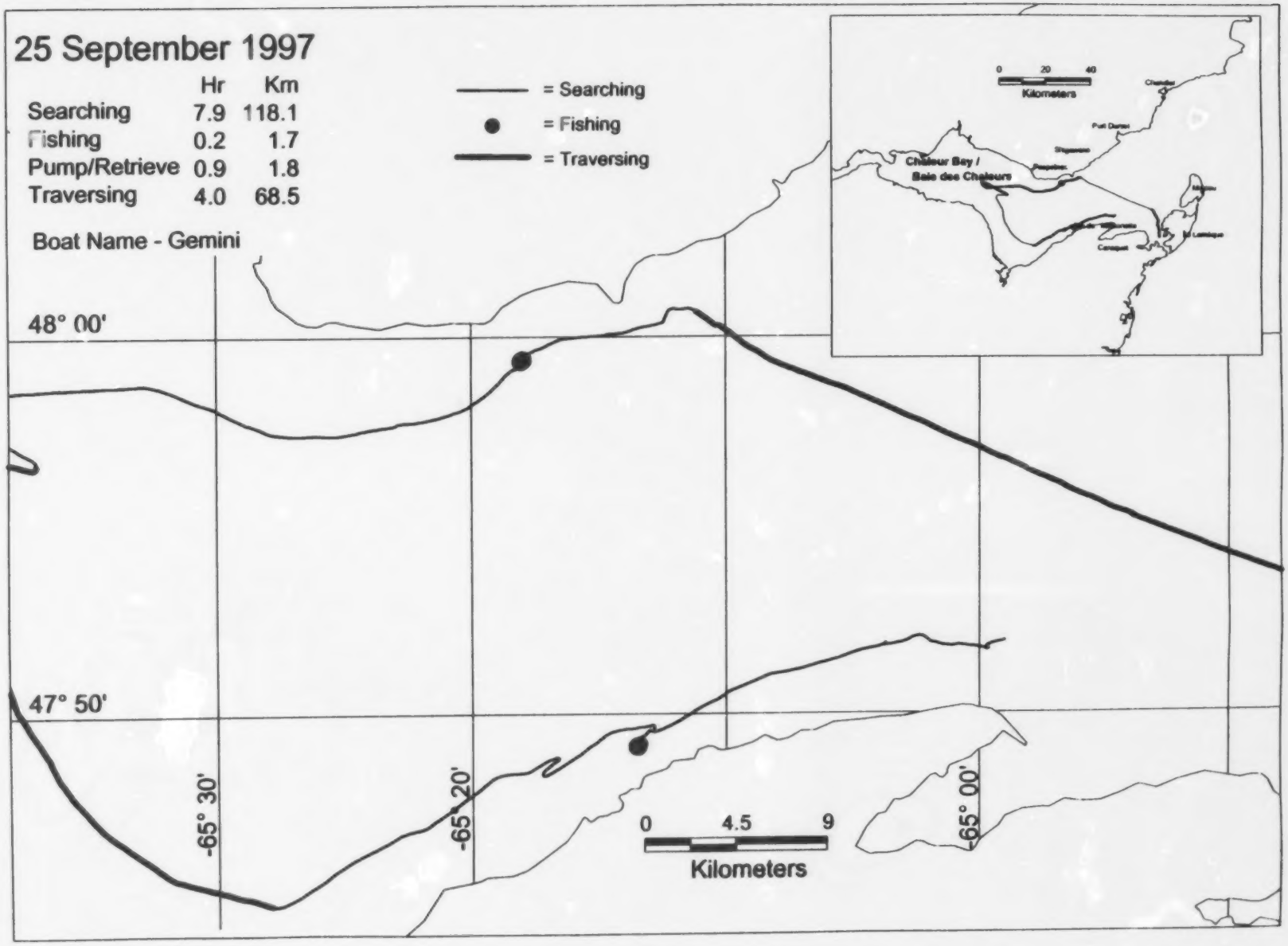

16 September 1997
Hr Km
Searching 9.1 113.8
Fishing 2.2 36.4
Pump/Retrieve 4.4 57.9
Waiting 1.0 18.7
Boat Name - Gemini
= Searching
= Fishing
0 4 8
Kilometers
Chaleur Bay /
Baie des Chaleurs
48° 10'
-64° 40'
-64° 30'
-64° 20'
-64° 10'

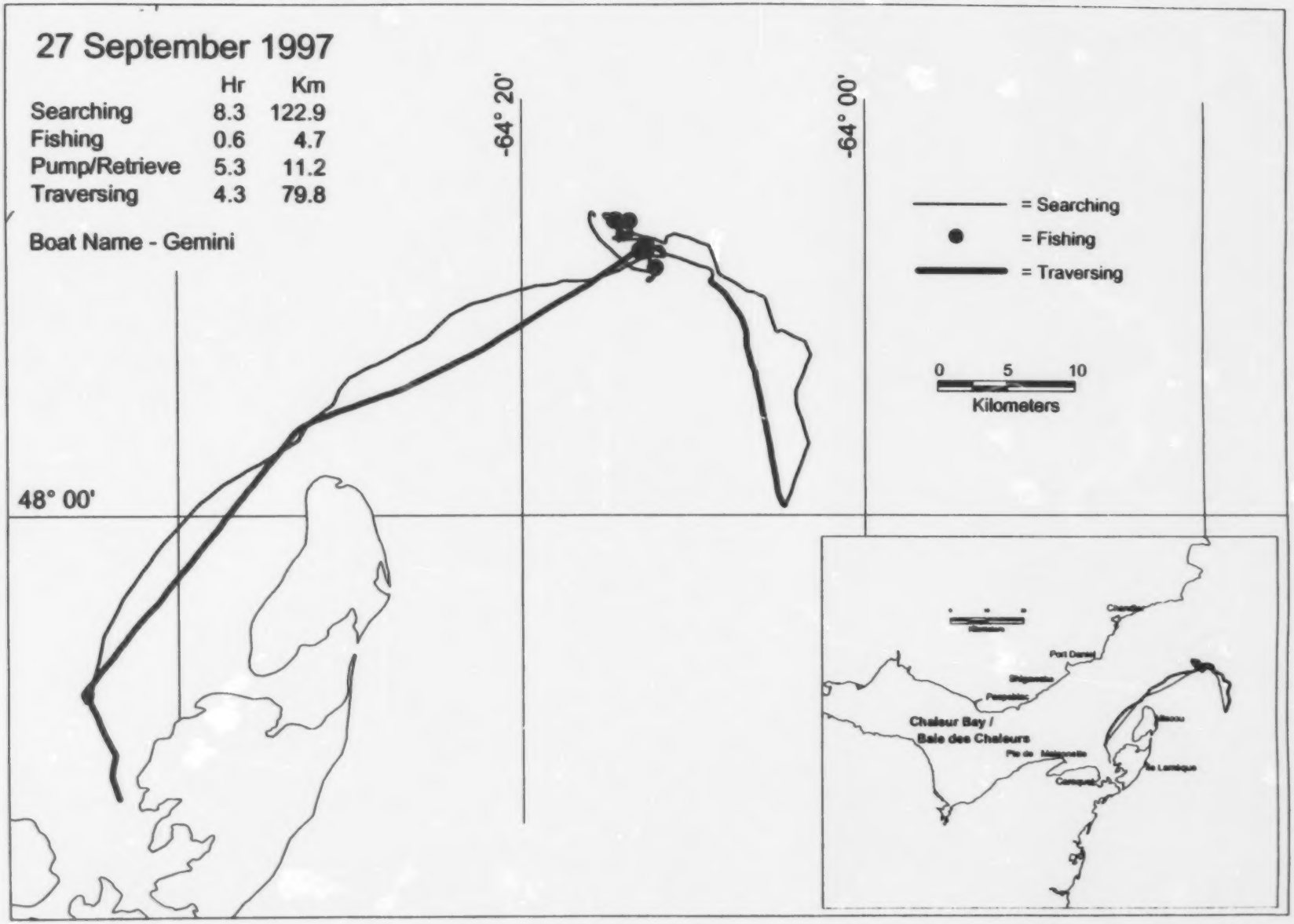

18 September 1997
Hr Km
Searching 7.0 104.1
Fishing 0.7 5.4
Pump/Retrieve 6.5 12.5
Traversing 1.1 17.4
Boat Name - Gemini
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay
Baie des Chaleurs
Miscou
Maisonnette
Caraquet
Ile Lamèque
47° 50'
-65° 20'
-65° 00'
0 2 4
Kilometers
= Searching
= Fishing
= Traversing

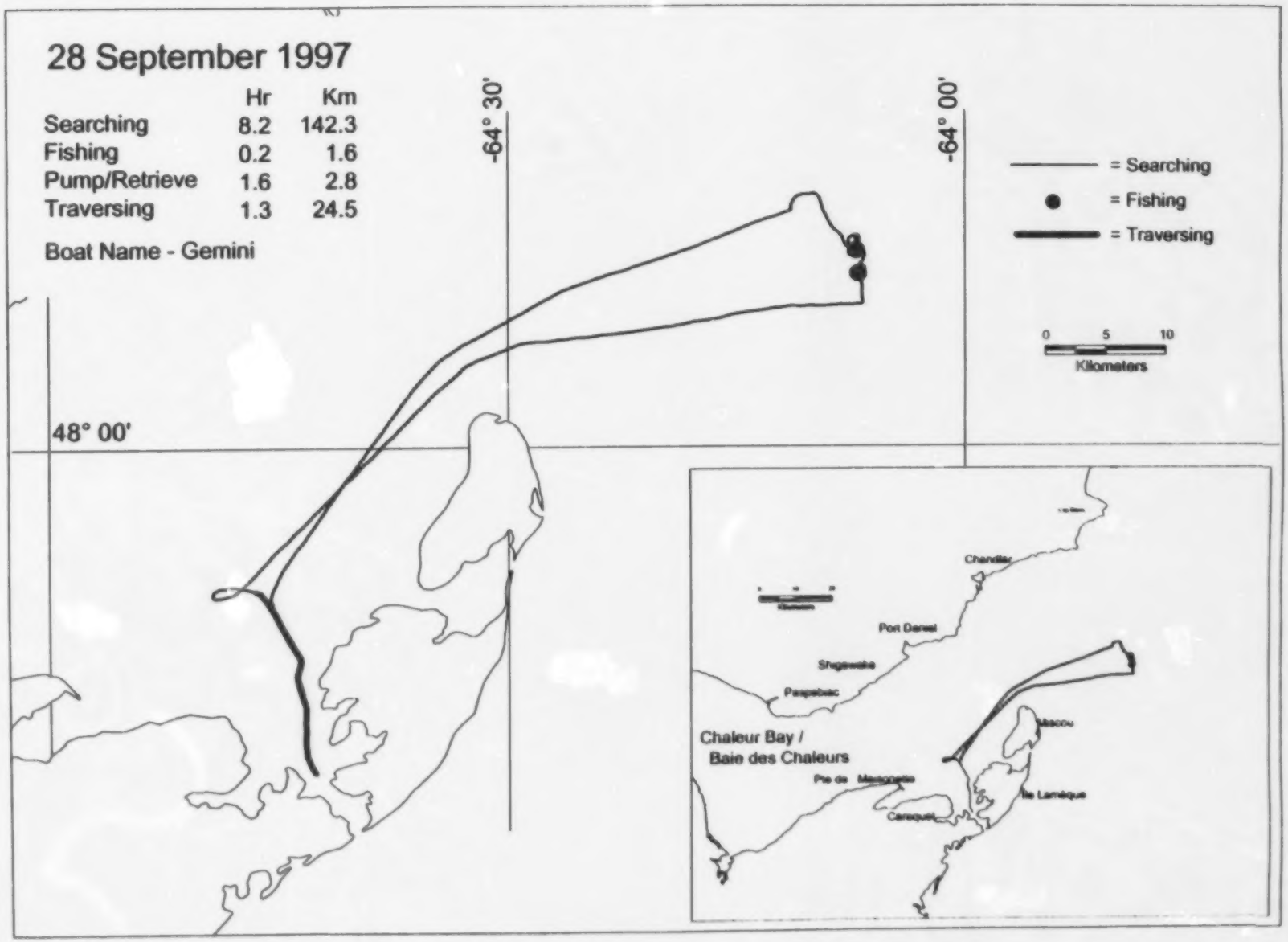

0 10 20
Kilometers
20 September 1997
Hr Km
Searching 4.7 75.6
Fishing 0.3 1.9
Pump/Retrieve 1.4 2.4
Traversing 3.7 71.7
Boat Name - Gemini
Chaleur Bay / Baie des Chaleurs
= Searching
= Fishing
= Traversing
48° 00'
-65° 20'
-65° 00'
-64° 40'
-64° 20'

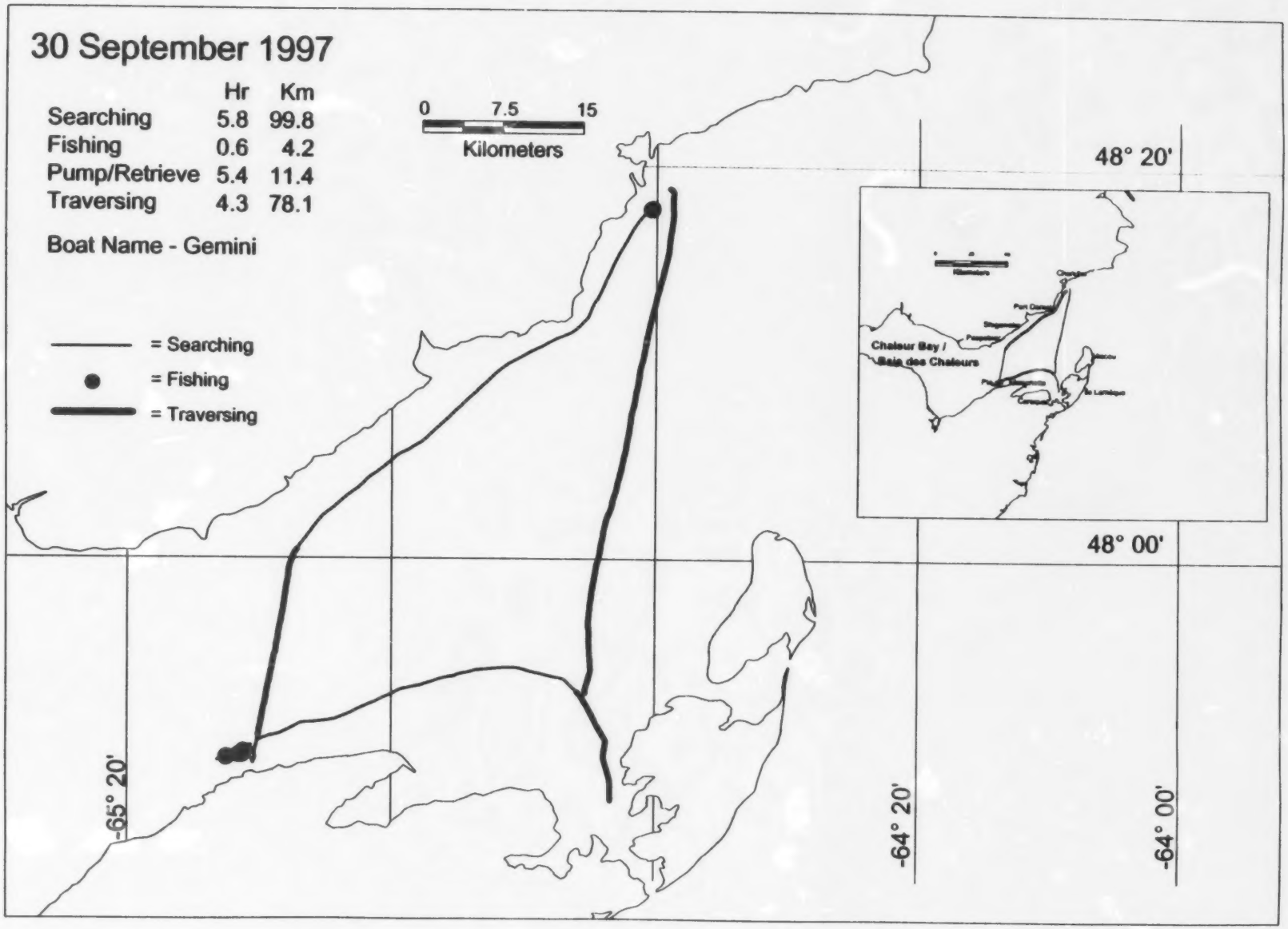

22 September 1997
Hr Km
Searching 7.9 111.6
Fishing 0.3 1.9
Pump/Retrieve 2.5 8.1
Traversing 1.7 29.9
Boat Name - Gemini
-65° 10'
-65° 00'
47° 50'
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Carleton
0 15 30
Kilometers
0 2 4
Kilometers
= Searching
= Fishing
= Traversing

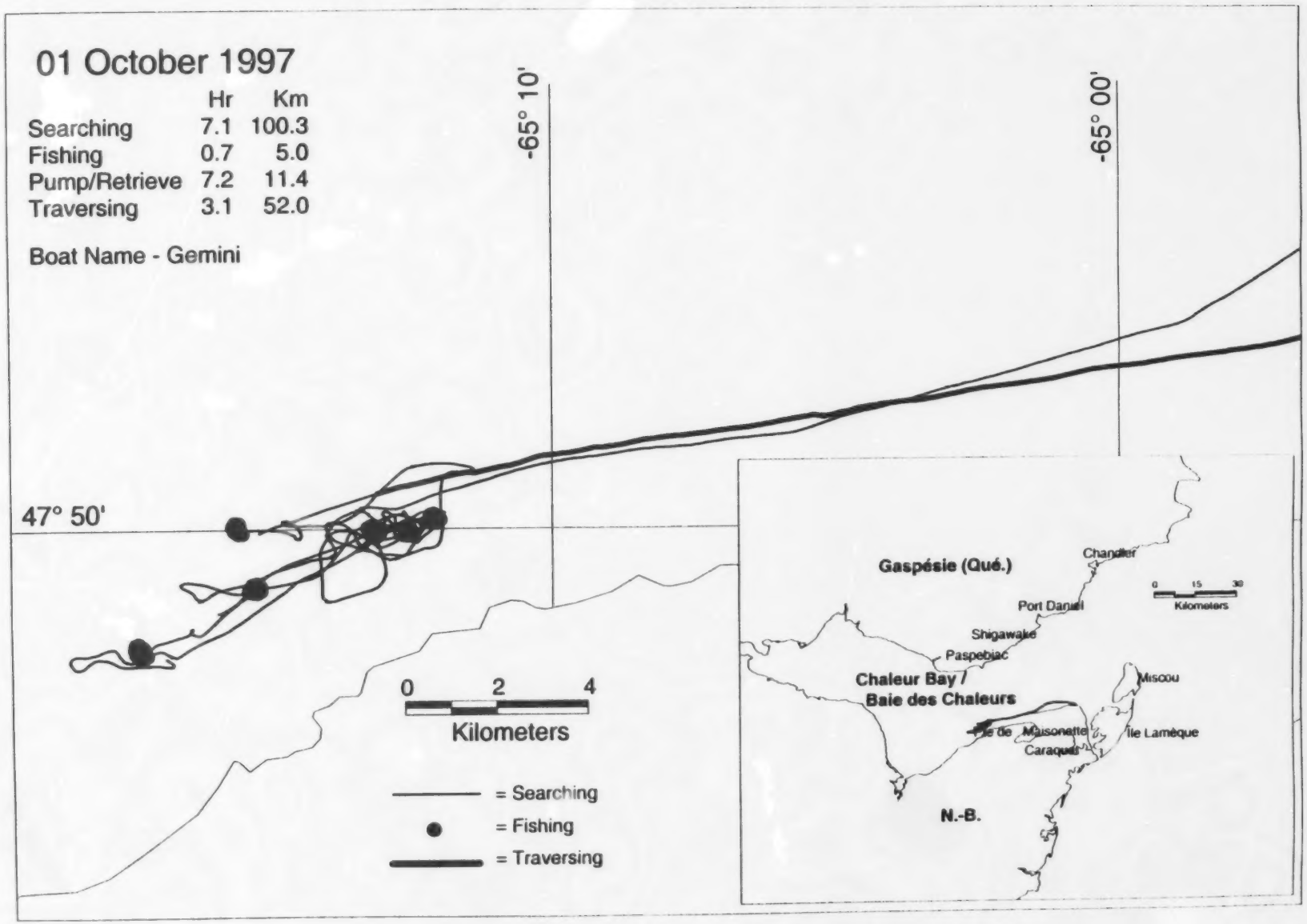

23 September 1997
Hr Km
Searching 6.0 101.4
Fishing 0.2 1.5
Pump/Retrieve 1.7 3.4
Traversing 4.6 77.4
Boat Name - Gemini
Chaleur Bay /
Baie des Chaleurs
48° 20'
-64° 40'
-64° 30'
= Searching
= Fishing
= Traversing
0 3 6
Kilometers

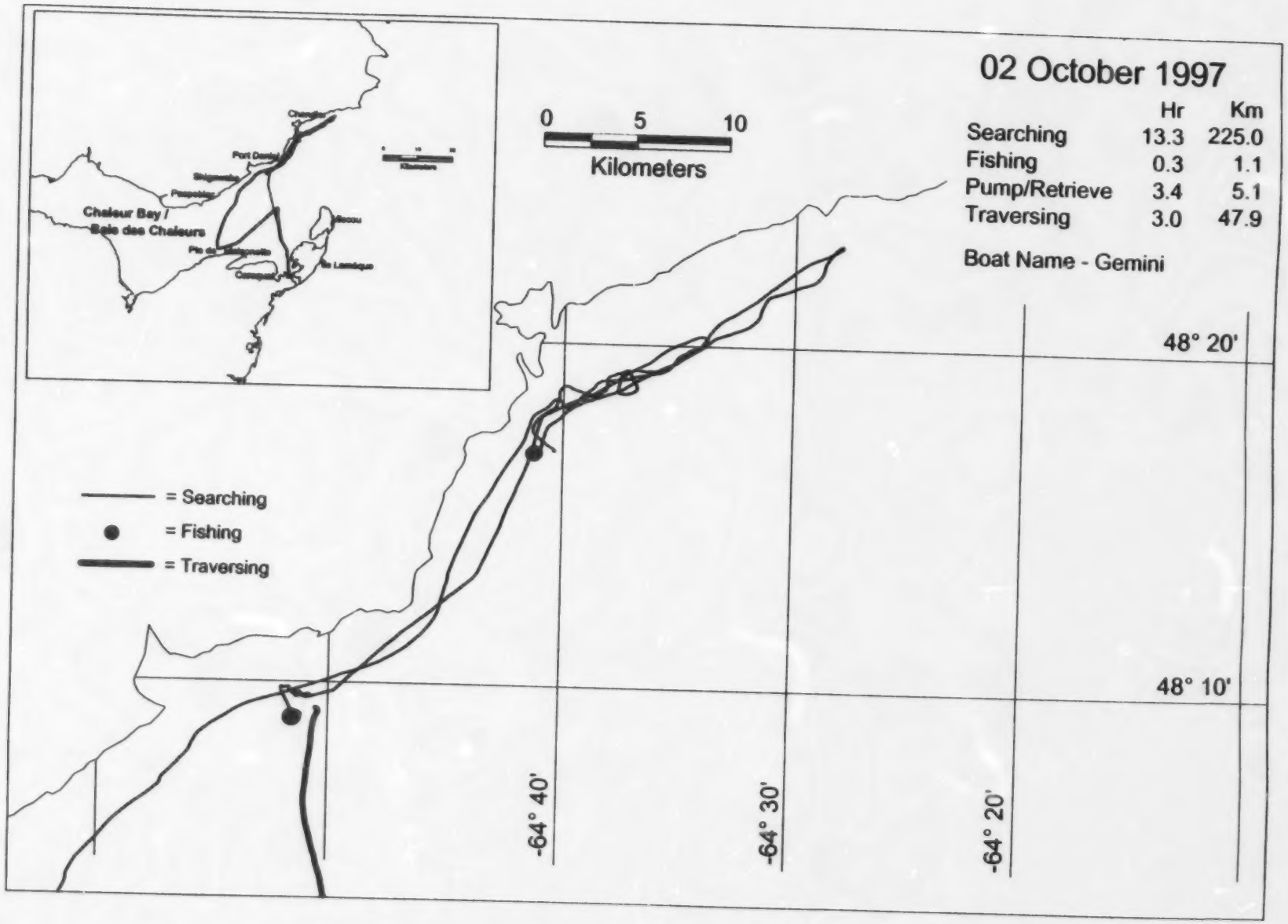

25 September 1997
Hr Km
Searching 7.9 118.1
Fishing 0.2 1.7
Pump/Retrieve 0.9 1.8
Traversing 4.0 68.5
Boat Name - Gemini
= Searching
= Fishing
= Traversing
48° 00'
47° 50'
-65° 30'
-65° 20'
-65° 00'
0 4.5 9
Kilometers
0 20 40
Kilometers
Chaleur Bay /
Baie des Chaleurs

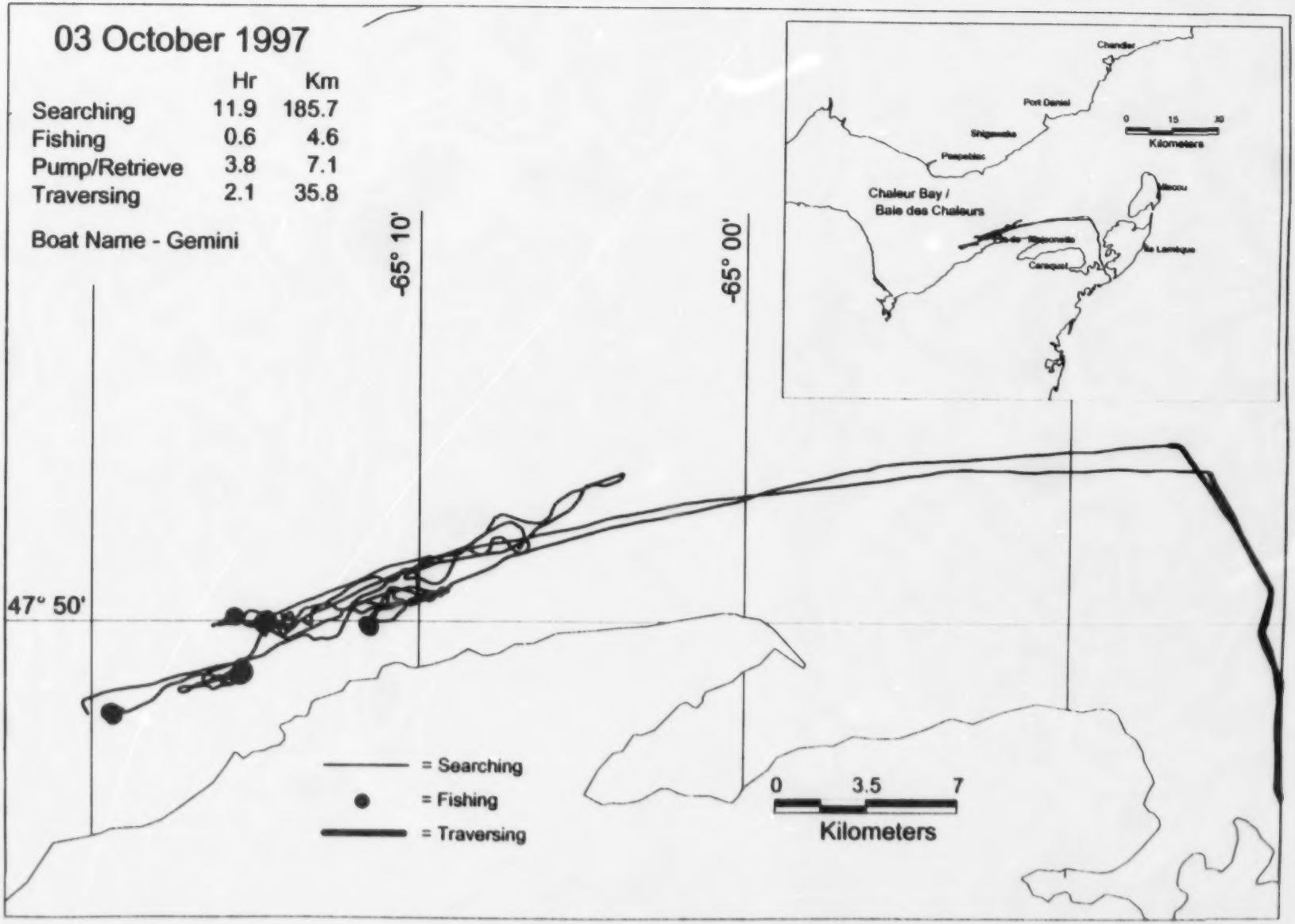

27 September 1997
Hr Km
Searching 8.3 122.9
Fishing 0.6 4.7
Pump/Retrieve 5.3 11.2
Traversing 4.3 79.8
Boat Name - Gemini
-64° 20'
-64° 00'
48° 00'
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
Chaleur Bay /
Baie des Chaleurs

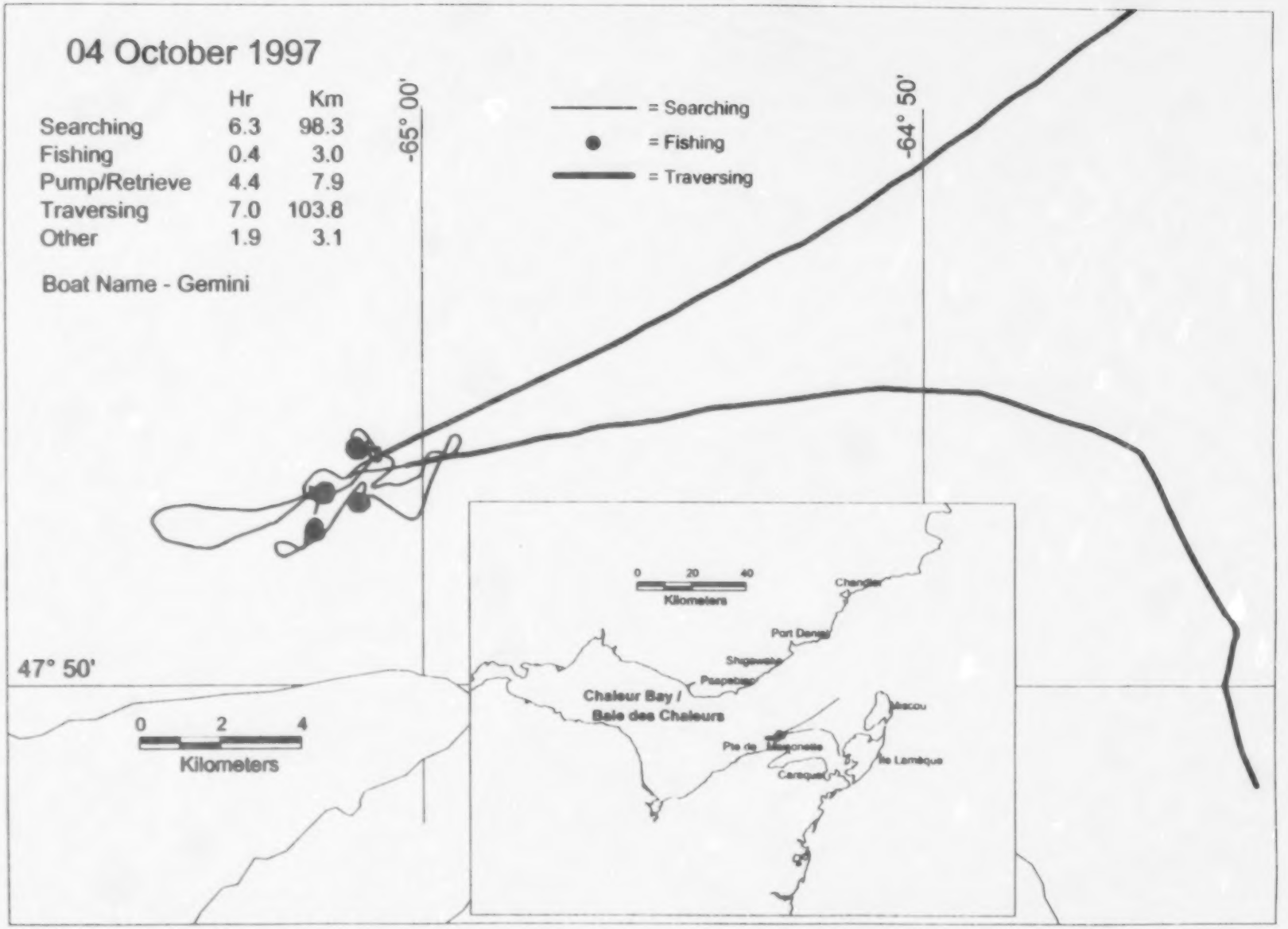

28 September 1997
Hr Km
Searching 8.2 142.3
Fishing 0.2 1.6
Pump/Retrieve 1.6 2.8
Traversing 1.3 24.5
Boat Name - Gemini
-64° 30'
-64° 00'
48° 00'
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
Chandler
Port Daniel
Shigawake
Paspebiac
Maccou
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonnette
Carleguet
Ile Lamèque

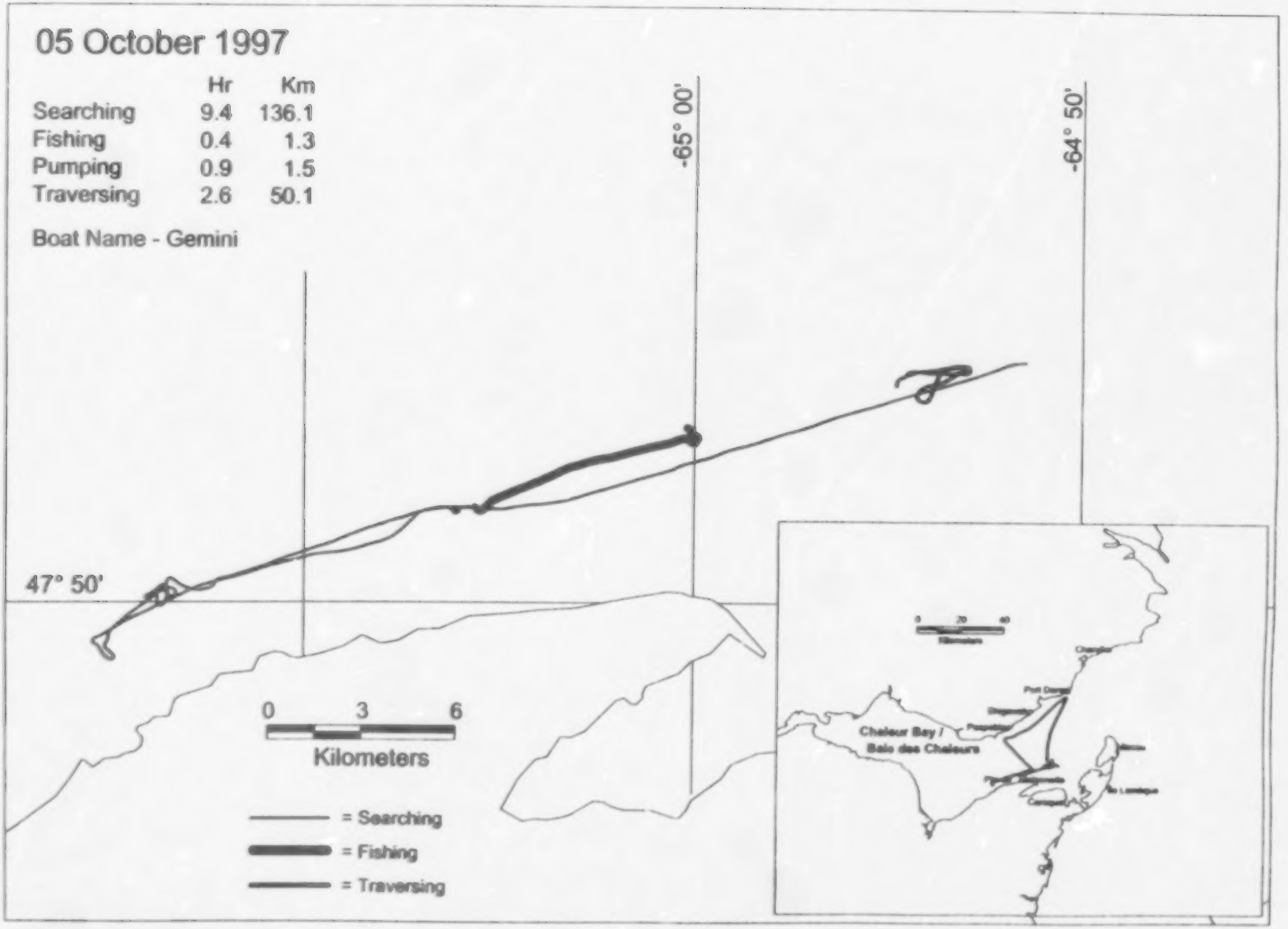

30 September 1997
Hr Km
Searching 5.8 99.8
Fishing 0.6 4.2
Pump/Retrieve 5.4 11.4
Traversing 4.3 78.1
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 7.5 15
Kilometers
48° 20'
48° 00'
-65° 20'
-64° 20'
-64° 00'
Chaleur Bay /
Baie des Chaleurs

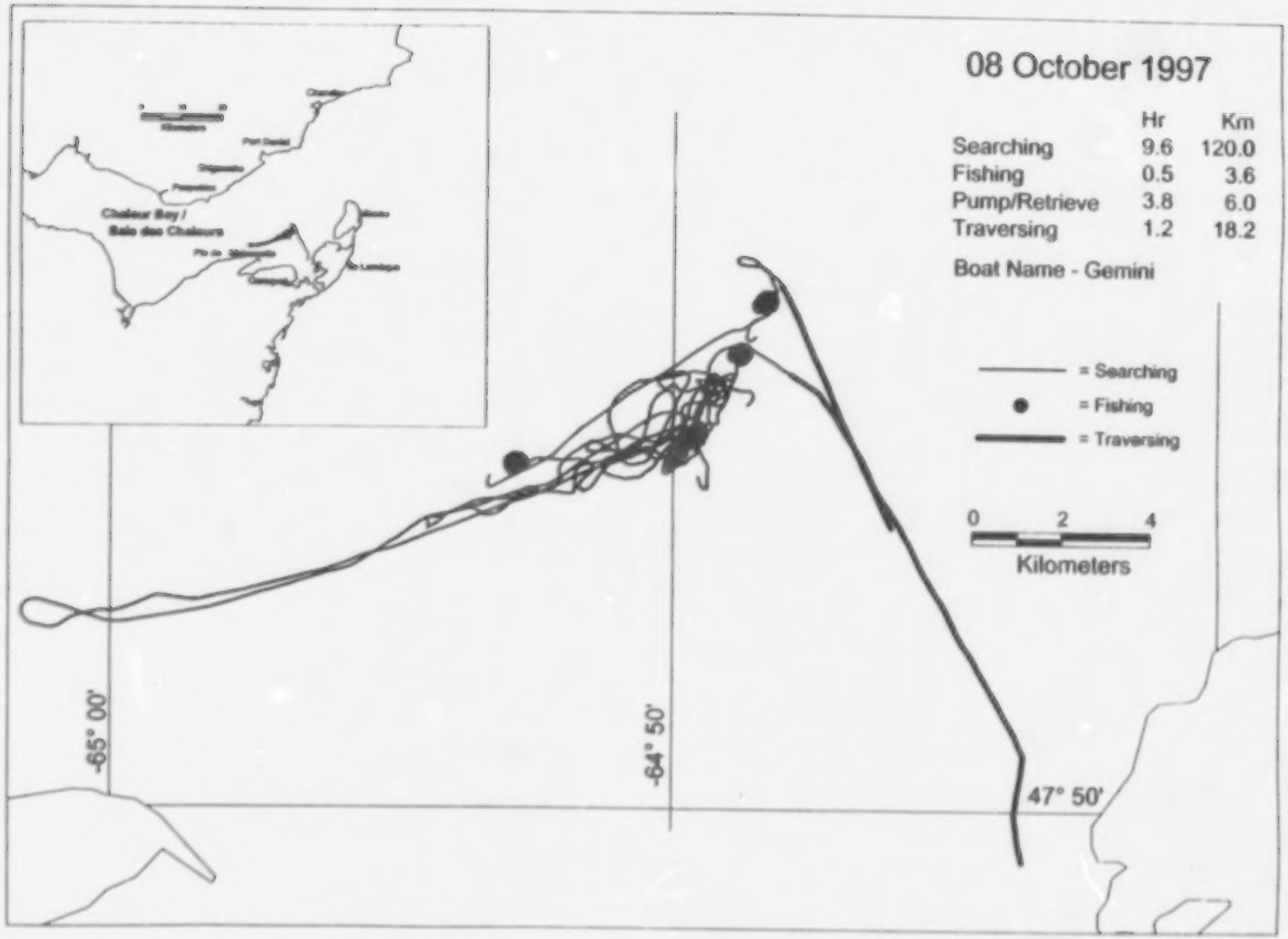

01 October 1997
Hr Km
Searching 7.1 100.3
Fishing 0.7 5.0
Pump/Retrieve 7.2 11.4
Traversing 3.1 52.0
Boat Name - Gemini
-65° 10'
-65° 00'
47° 50'
0 2 4
Kilometers
= Searching
= Fishing
= Traversing
Gaspésie (Qué.)
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Miscou
Ile de Maisonette
Caraquet
Ile Lamèque
N.-B.
0 15 30
Kilometers

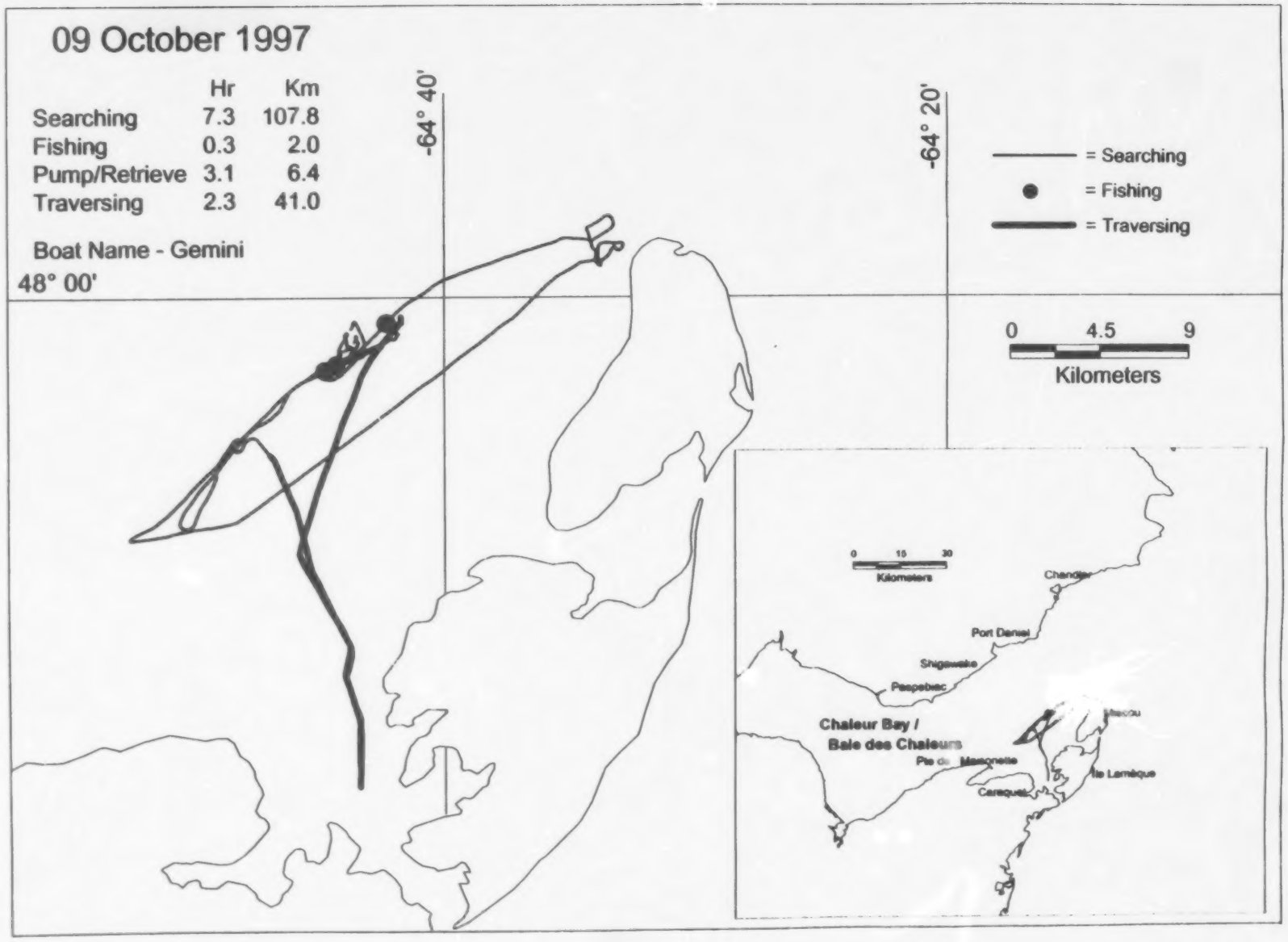

02 October 1997
Hr Km
Searching 13.3 225.0
Fishing 0.3 1.1
Pump/Retrieve 3.4 5.1
Traversing 3.0 47.9
Boat Name - Gemini
0 5 10
Kilometers
Chaleur Bay / Baie des Chaleurs
= Searching
= Fishing
= Traversing
48° 20'
48° 10'
-64° 40'
-64° 30'
-64° 20'

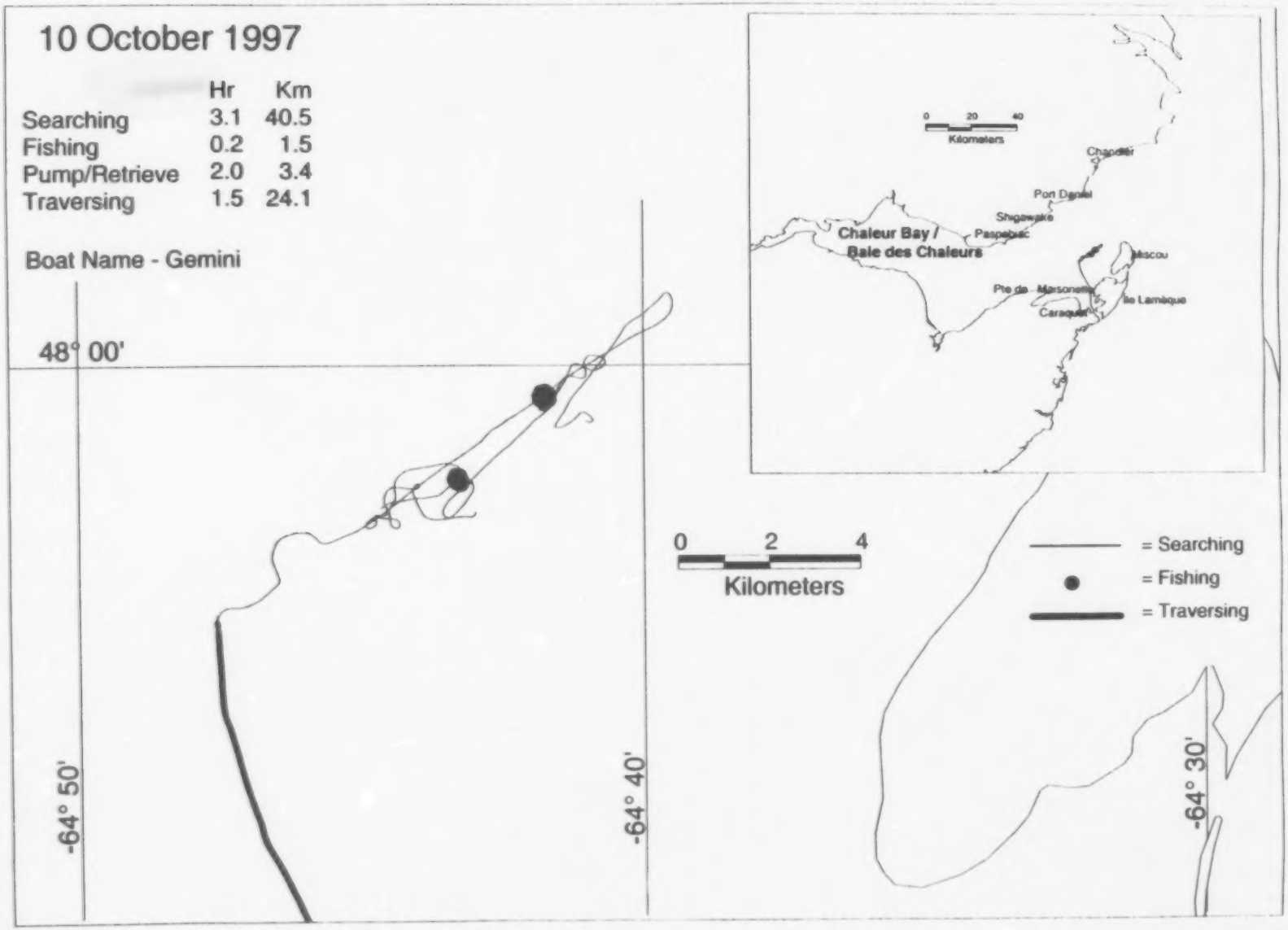

03 October 1997
Hr Km
Searching 11.9 185.7
Fishing 0.6 4.6
Pump/Retrieve 3.8 7.1
Traversing 2.1 35.8
Boat Name - Gemini
-65° 10'
-65° 00'
47° 50'
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Carleton
0 15 30
Kilometers
= Searching
= Fishing
= Traversing
0 3.5 7
Kilometers

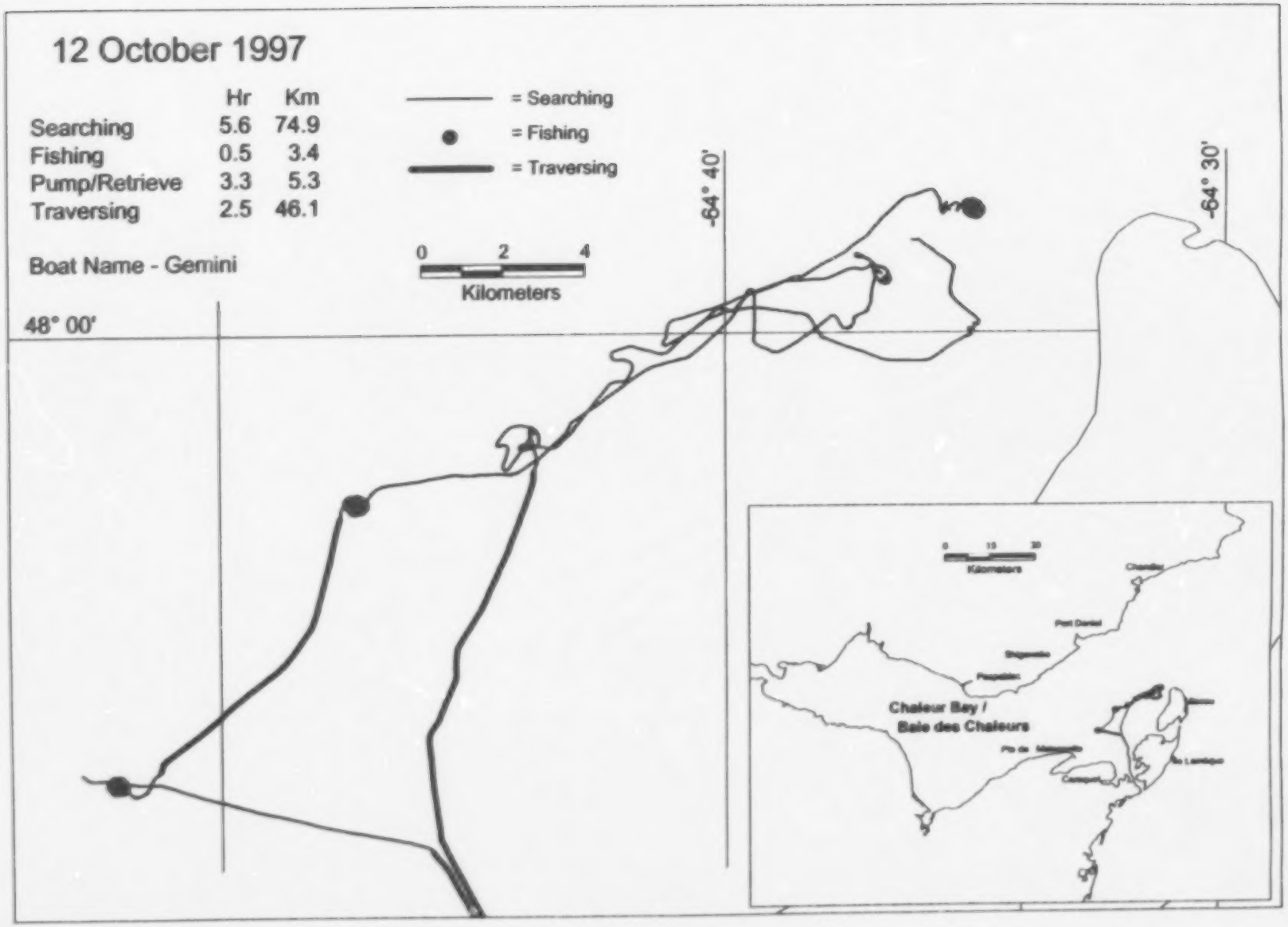

04 October 1997
Hr Km
Searching 6.3 98.3
Fishing 0.4 3.0
Pump/Retrieve 4.4 7.9
Traversing 7.0 103.8
Other 1.9 3.1
Boat Name - Gemini
= Searching
= Fishing
= Traversing
-65° 00'
-64° 50'
47° 50'
0 2 4
Kilometers
0 20 40
Kilometers
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Miscou
Pte de Maisonnette
Caraquet
Ile Lamèque

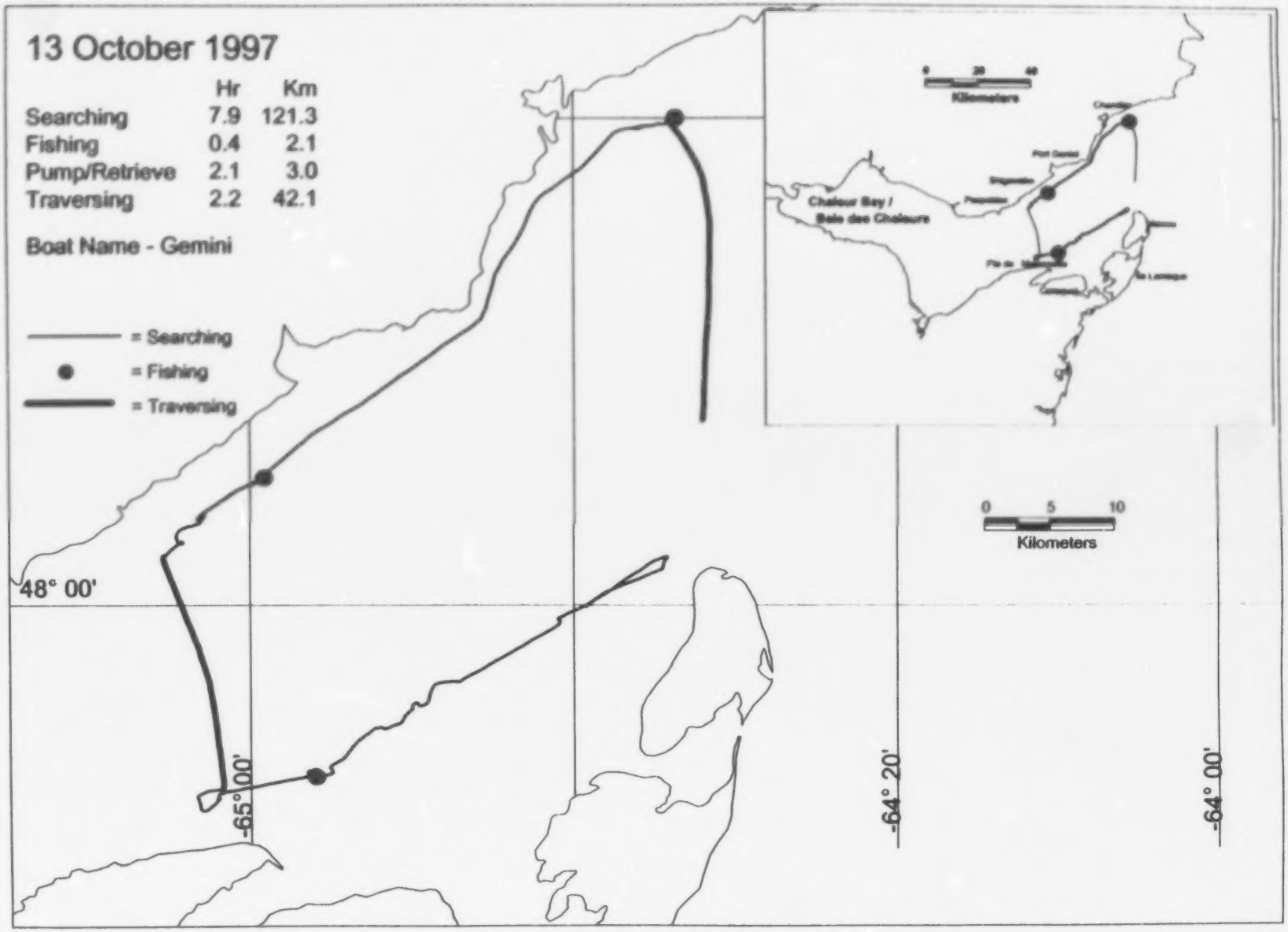

05 October 1997
Hr Km
Searching 9.4 136.1
Fishing 0.4 1.3
Pumping 0.9 1.5
Traversing 2.6 50.1
Boat Name - Gemini
-65° 00'
-64° 50'
47° 50'
0 3 6
Kilometers
= Searching
= Fishing
= Traversing
Chaleur Bay /
Baie des Chaleurs

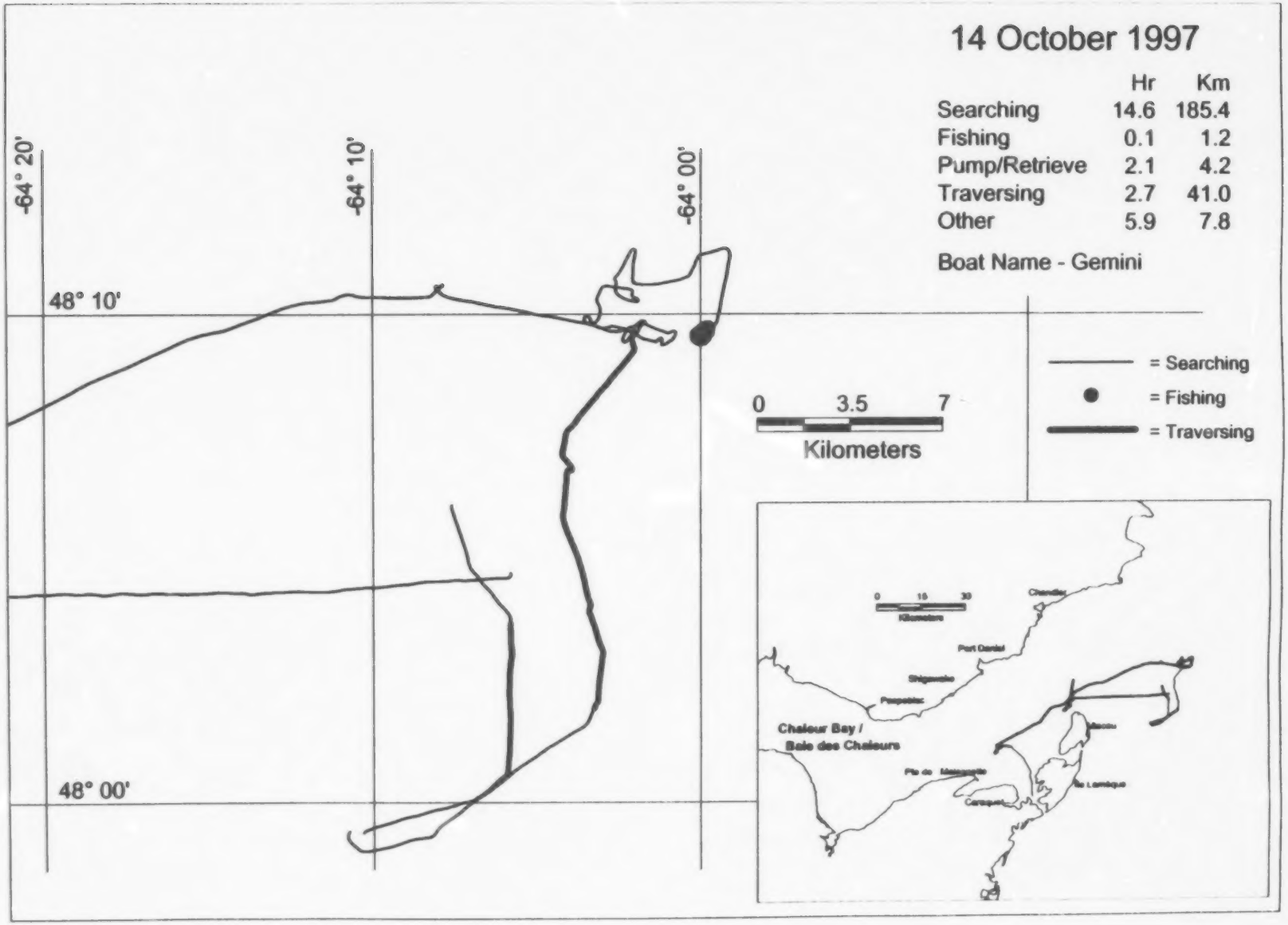

08 October 1997
Hr Km
Searching 9.6 120.0
Fishing 0.5 3.6
Pump/Retrieve 3.8 6.0
Traversing 1.2 18.2
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 2 4
Kilometers
-65° 00'
-64° 50'
47° 50'
Chaleur Bay /
Baie des Chaleurs

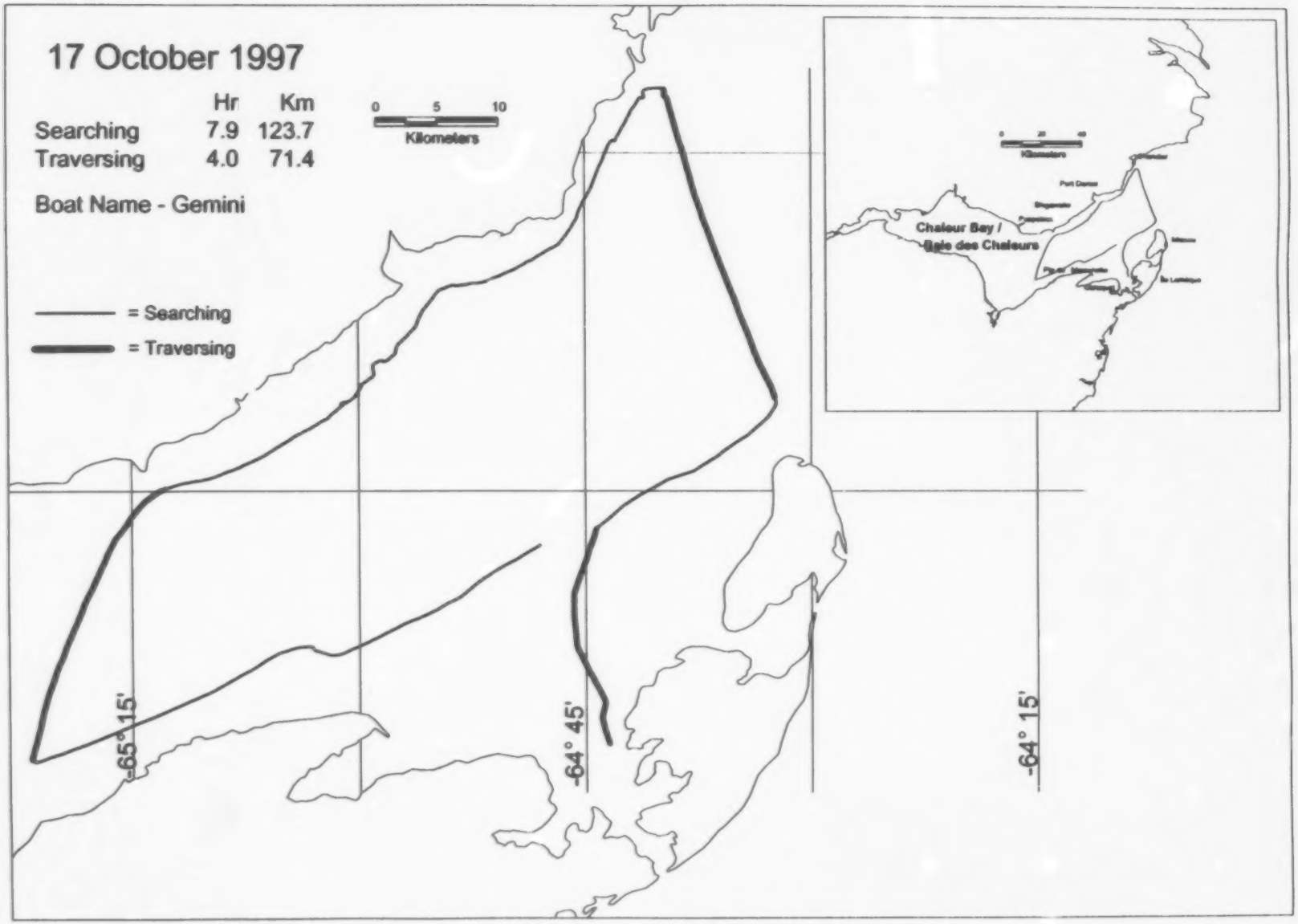

09 October 1997
Hr Km
Searching 7.3 107.8
Fishing 0.3 2.0
Pump/Retrieve 3.1 6.4
Traversing 2.3 41.0
Boat Name - Gemini
48° 00'
-64° 40'
-64° 20'
= Searching
= Fishing
= Traversing
0 4.5 9
Kilometers
0 15 30
Kilometers
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonette
Caraquet
Ile Lamèque

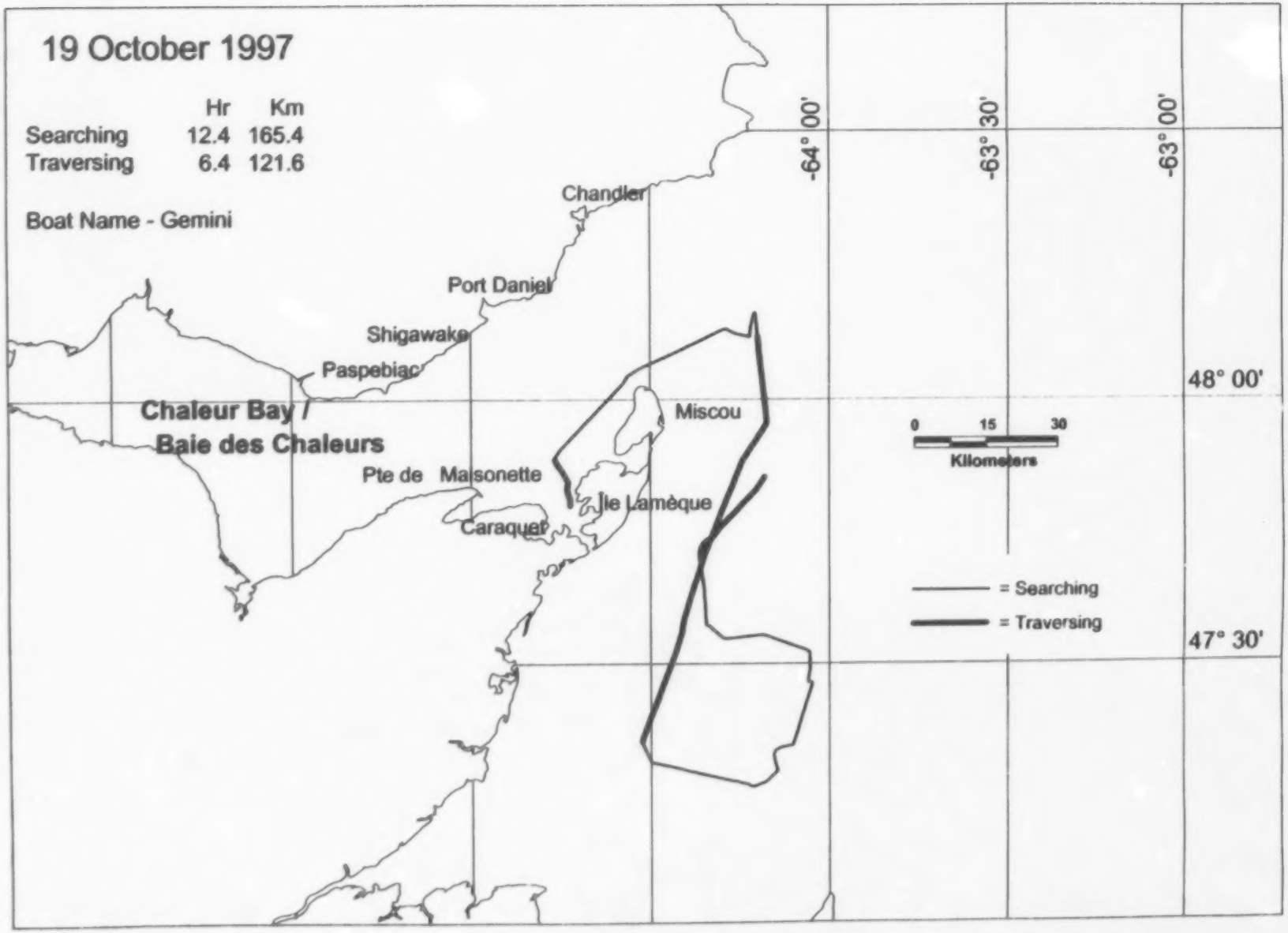

10 October 1997
Hr Km
Searching 3.1 40.5
Fishing 0.2 1.5
Pump/Retrieve 2.0 3.4
Traversing 1.5 24.1
Boat Name - Gemini
48° 00'
-64° 50'
-64° 40'
-64° 30'
0 2 4
Kilometers
= Searching
= Fishing
= Traversing
0 20 40
Kilometers
Chaleur Bay / Baie des Chaleurs
Chandler
Pon Daniel
Shigawake
Paspebiac
Mascou
Pte de Maisonnette
Caraquet
Ile Lamèque

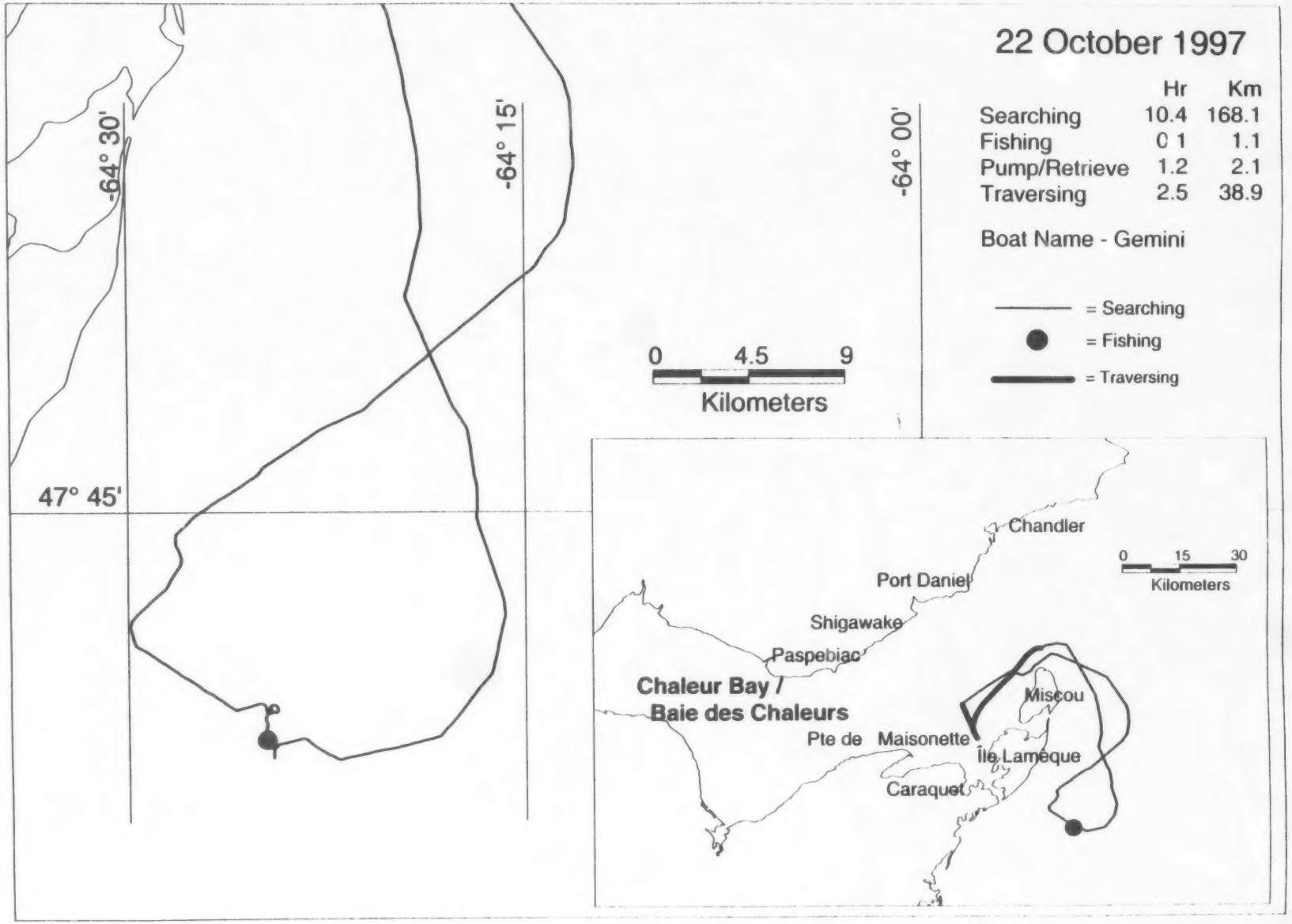

12 October 1997
Hr Km
Searching 5.6 74.9
Fishing 0.5 3.4
Pump/Retrieve 3.3 5.3
Traversing 2.5 46.1
= Searching
= Fishing
= Traversing
Boat Name - Gemini
0 2 4
Kilometers
48° 00'
-64° 40'
-64° 30'
Chaleur Bay /
Baie des Chaleurs

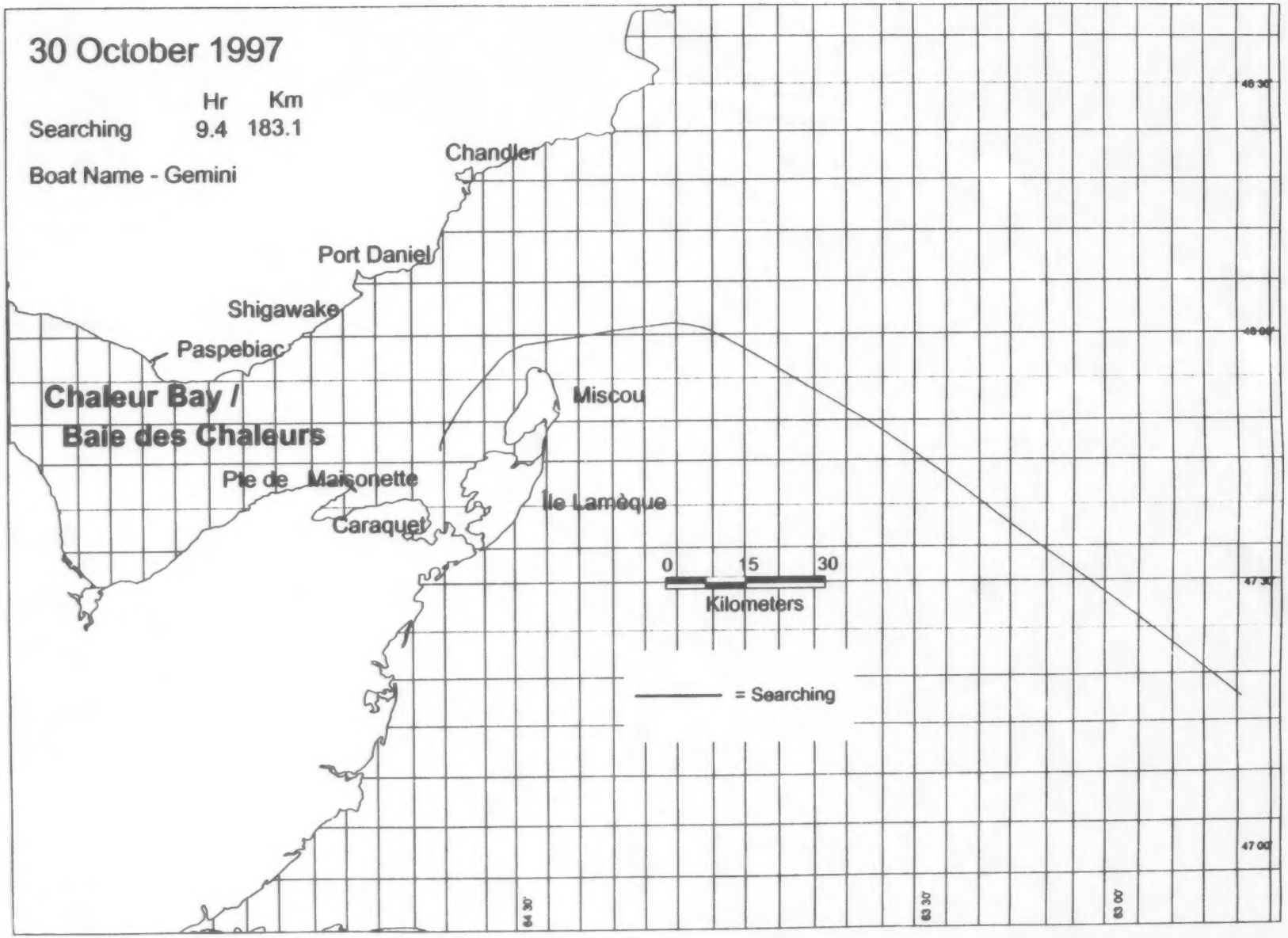

13 October 1997
Hr Km
Searching 7.9 121.3
Fishing 0.4 2.1
Pump/Retrieve 2.1 3.0
Traversing 2.2 42.1
Boat Name - Gemini
= Searching
= Fishing
= Traversing
48° 00'
-65° 00'
-64° 20'
-64° 00'
0 5 10
Kilometers
Chaleur Bay /
Baie des Chaleurs

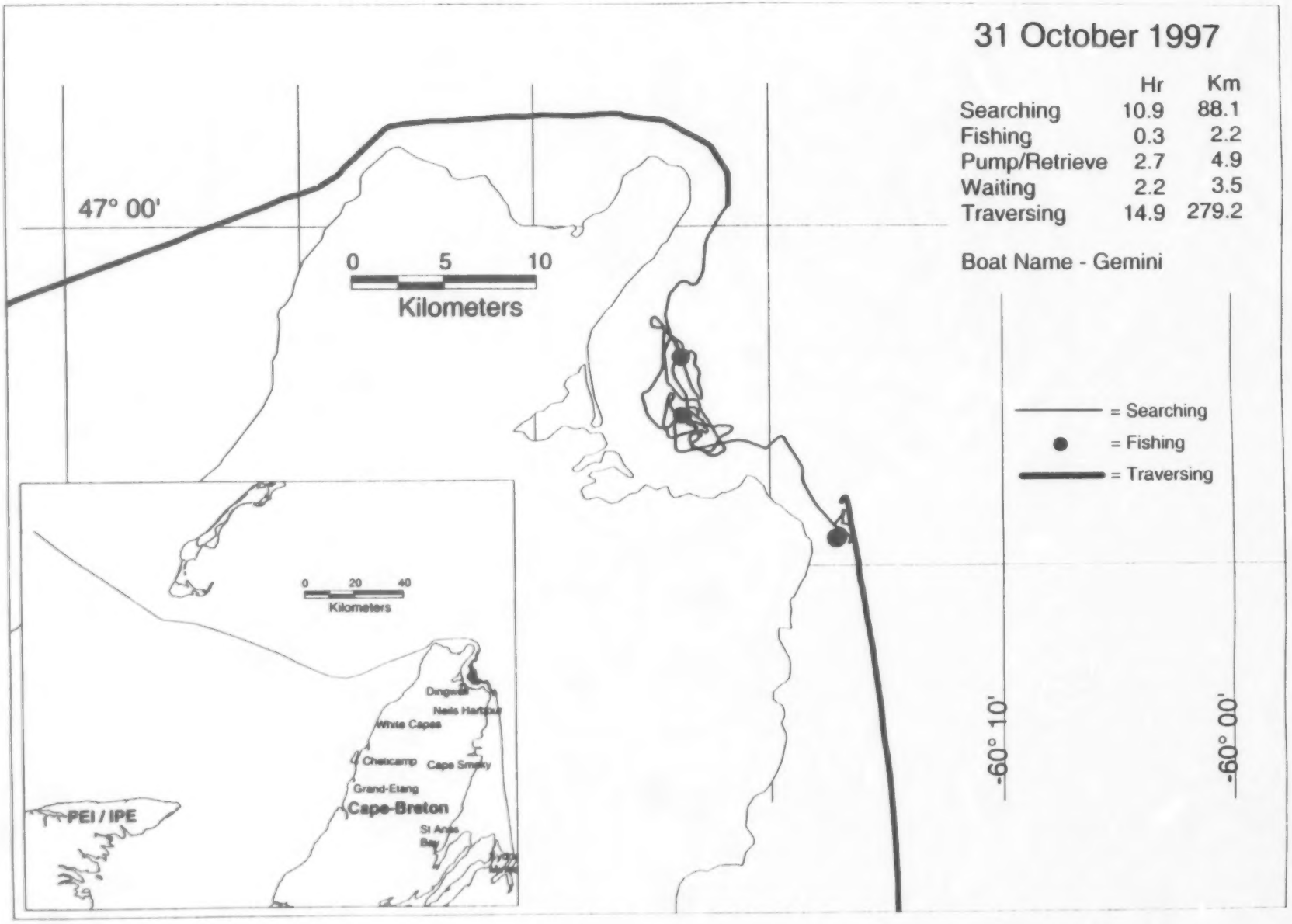

14 October 1997
Hr Km
Searching 14.6 185.4
Fishing 0.1 1.2
Pump/Retrieve 2.1 4.2
Traversing 2.7 41.0
Other 5.9 7.8
Boat Name - Gemini
-64° 20'
-64° 10'
-64° 00'
48° 10'
48° 00'
0 3.5 7
Kilometers
= Searching
= Fishing
= Traversing
Chaleur Bay /
Baie des Chaleurs

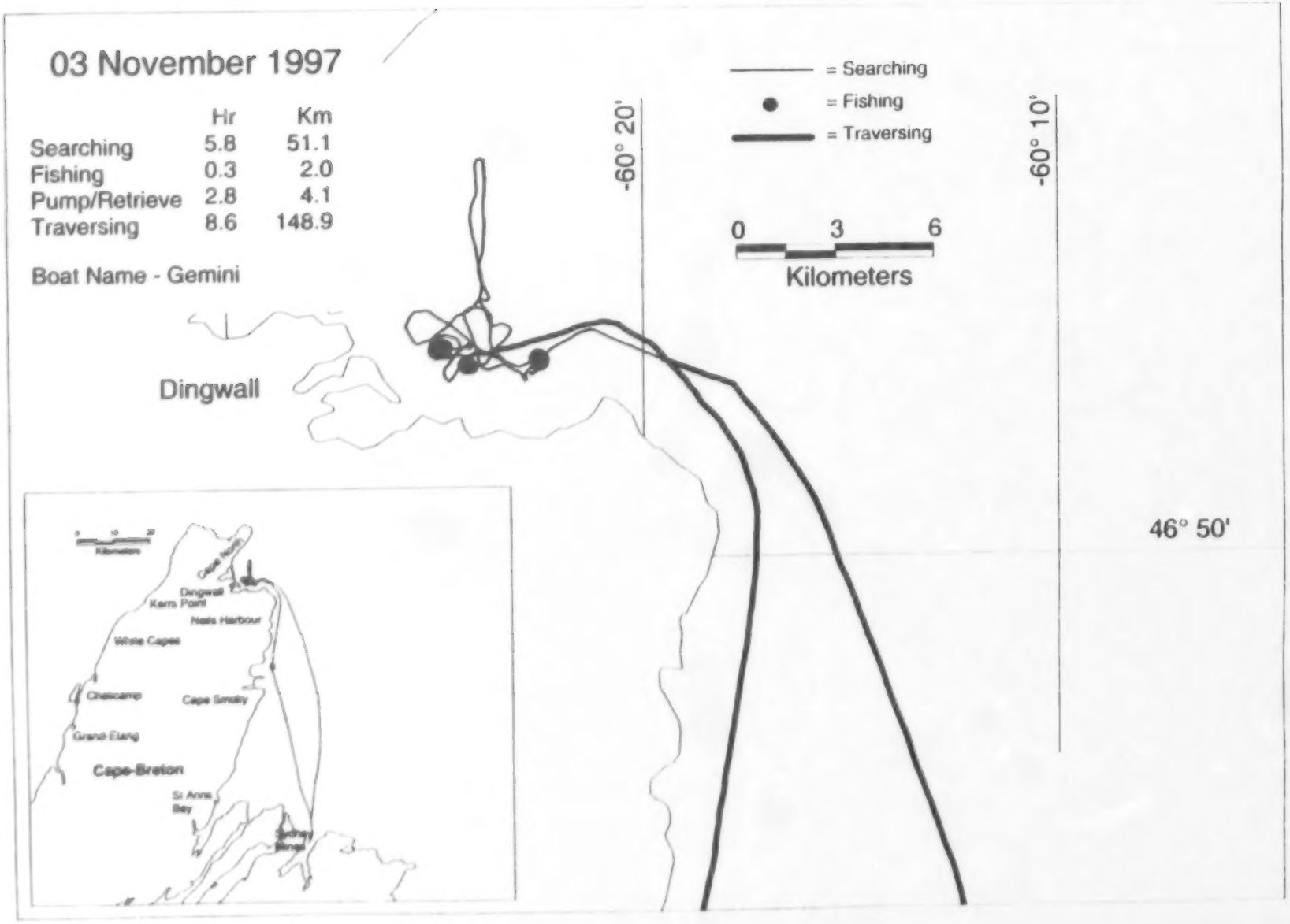

17 October 1997
Hr Km
Searching 7.9 123.7
Traversing 4.0 71.4
Boat Name - Gemini
0 5 10
Kilometers
= Searching
= Traversing
-65° 15'
-64° 45'
-64° 15'
Chaleur Bay /
Baie des Chaleurs

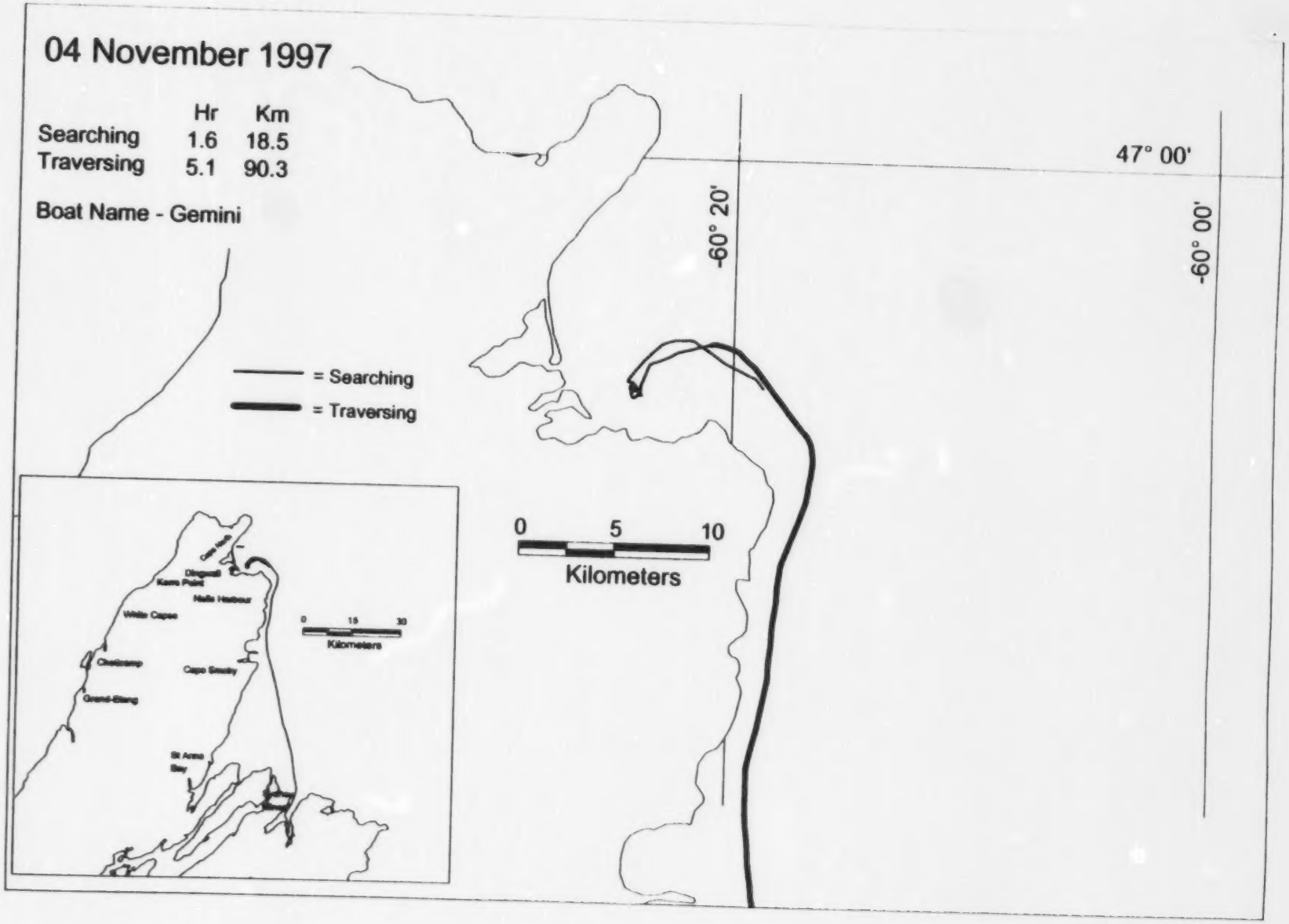

19 October 1997
Hr Km
Searching 12.4 165.4
Traversing 6.4 121.6
Boat Name - Gemini
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonette
Caraquet
Miscou
Ile Lamèque
-64° 00'
-63° 30'
-63° 00'
48° 00'
47° 30'
0 15 30
Kilometers
= Searching
= Traversing

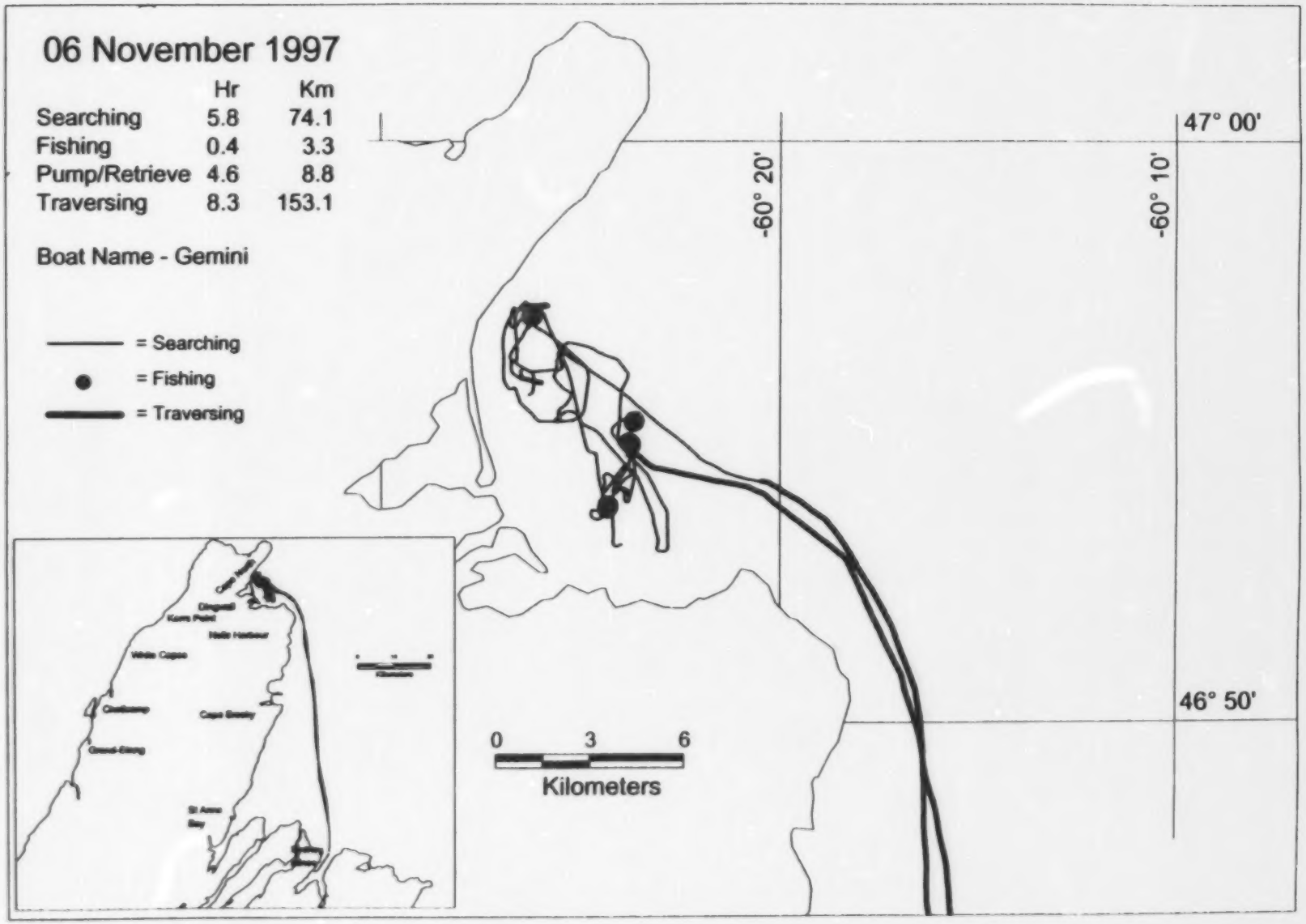

22 October 1997
Hr Km
Searching 10.4 168.1
Fishing 0 1 1.1
Pump/Retrieve 1.2 2.1
Traversing 2.5 38.9
Boat Name - Gemini
= Searching
= Fishing
= Traversing
-64° 30'
-64° 15'
-64° 00'
47° 45'
0 4.5 9
Kilometers
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonette
Miscou
Île Lamèque
Caraquet
0 15 30
Kilometers

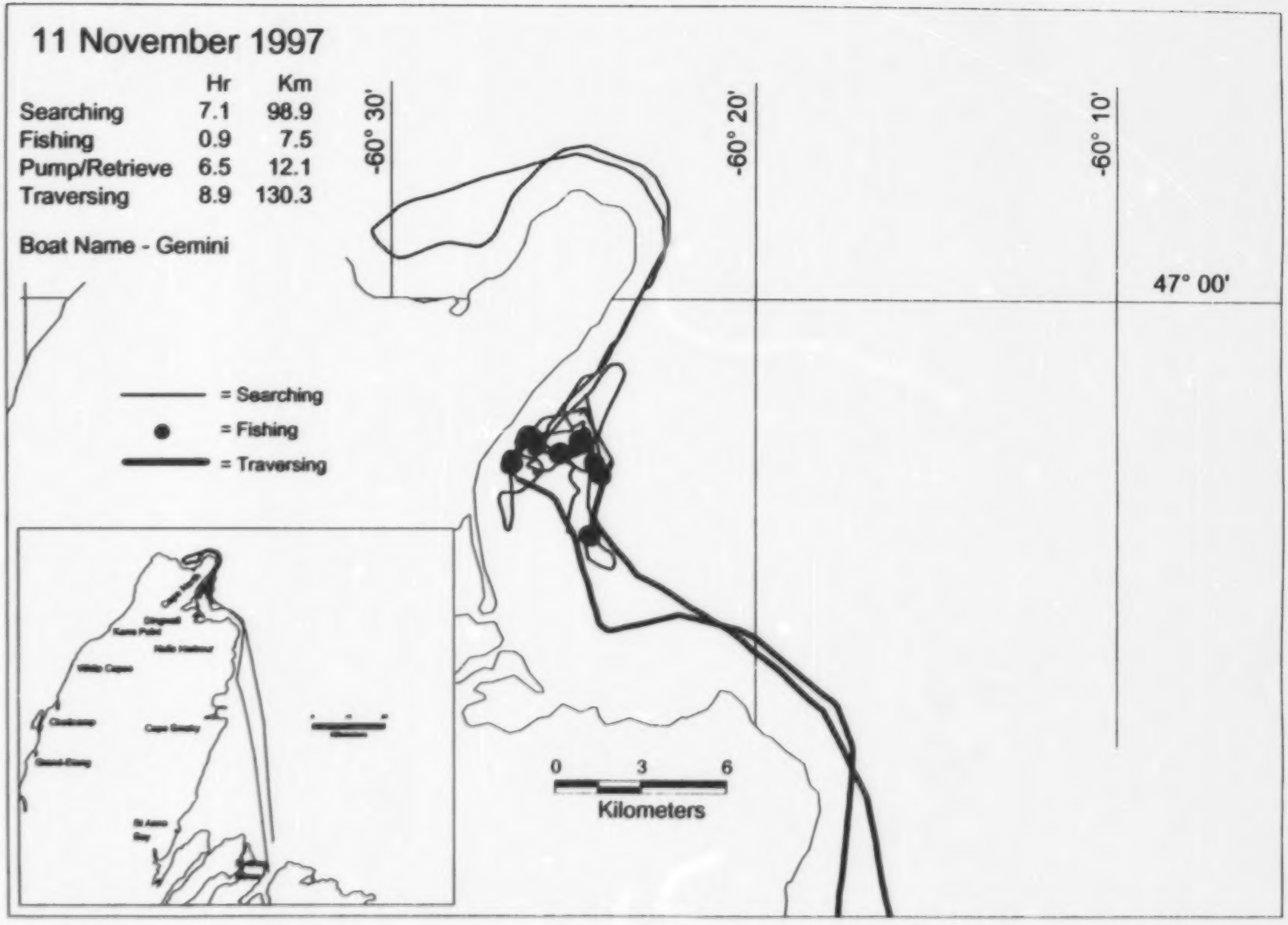

30 October 1997
Hr Km
Searching 9.4 183.1
Boat Name - Gemini
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonette
Caraquet
Miscou
Ile Lamèque
0 15 30
Kilometers
= Searching
48 30'
48 00'
47 30'
47 00'
64 30'
63 30'
63 00'

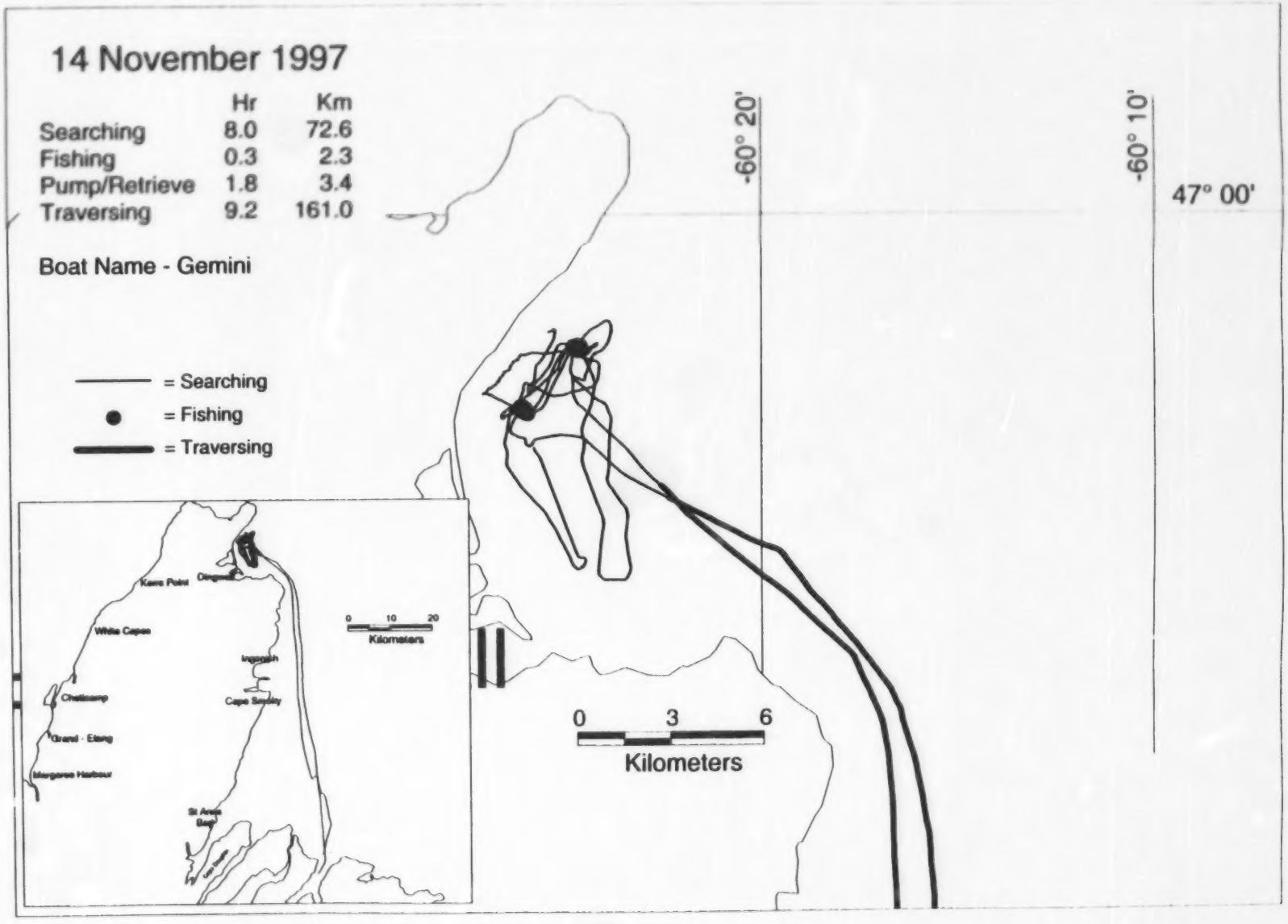

31 October 1997
Hr Km
Searching 10.9 88.1
Fishing 0.3 2.2
Pump/Retrieve 2.7 4.9
Waiting 2.2 3.5
Traversing 14.9 279.2
Boat Name - Gemini
47° 00'
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
-60° 10'
-60° 00'
0 20 40
Kilometers
Dingwall
Neils Harbour
White Capes
Chetcamp
Cape Smoky
Grand-Etang
Cape-Breton
PEI / IPE
St Anns Bay

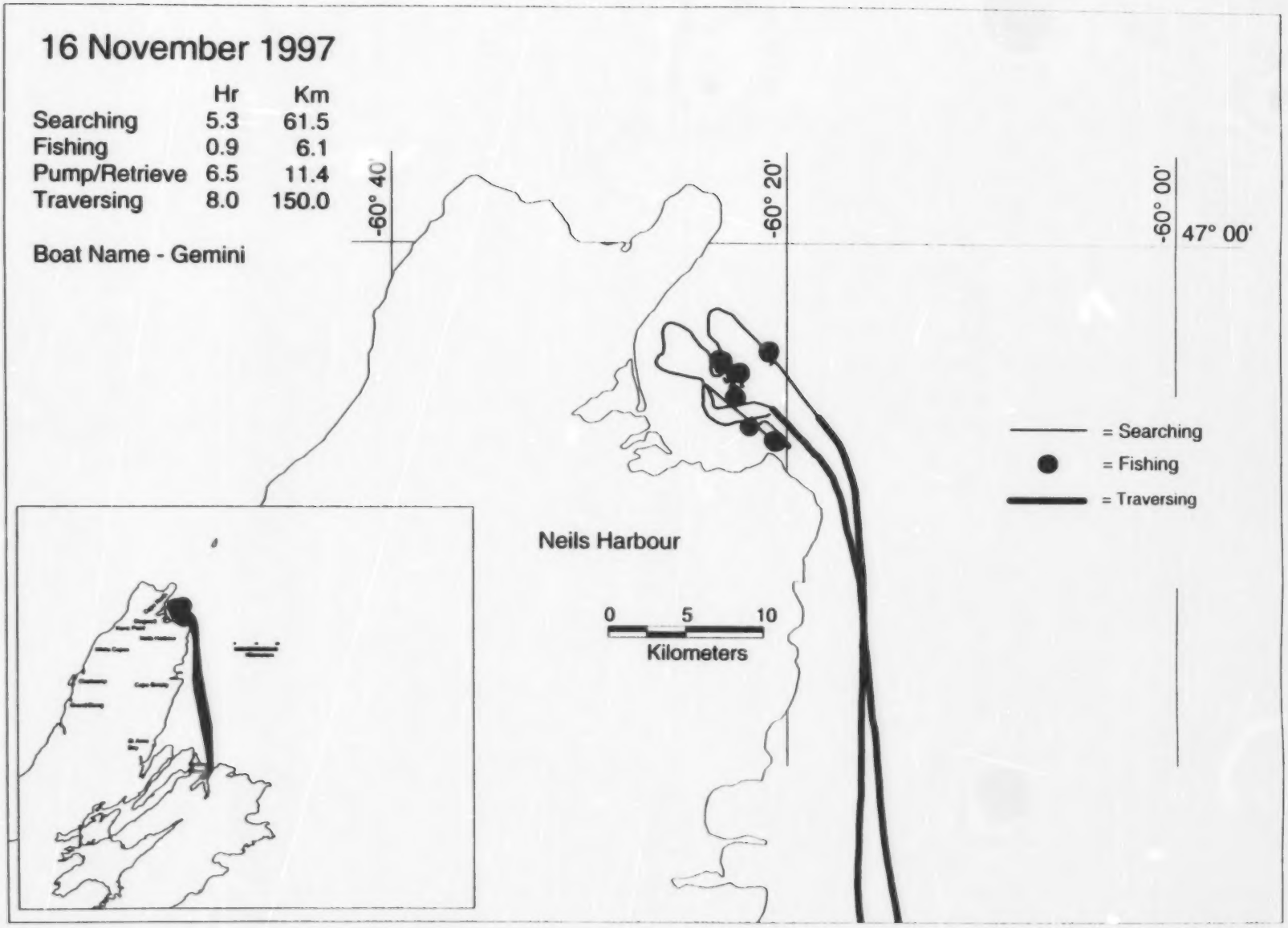

03 November 1997
Hr Km
Searching 5.8 51.1
Fishing 0.3 2.0
Pump/Retrieve 2.8 4.1
Traversing 8.6 148.9
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 3 6
Kilometers
-60° 20'
-60° 10'
46° 50'
Dingwall
Kerrs Point
Neals Harbour
White Capes
Chéticamp
Cape Smoky
Grand Etang
Cape-Breton
St Anns Bay

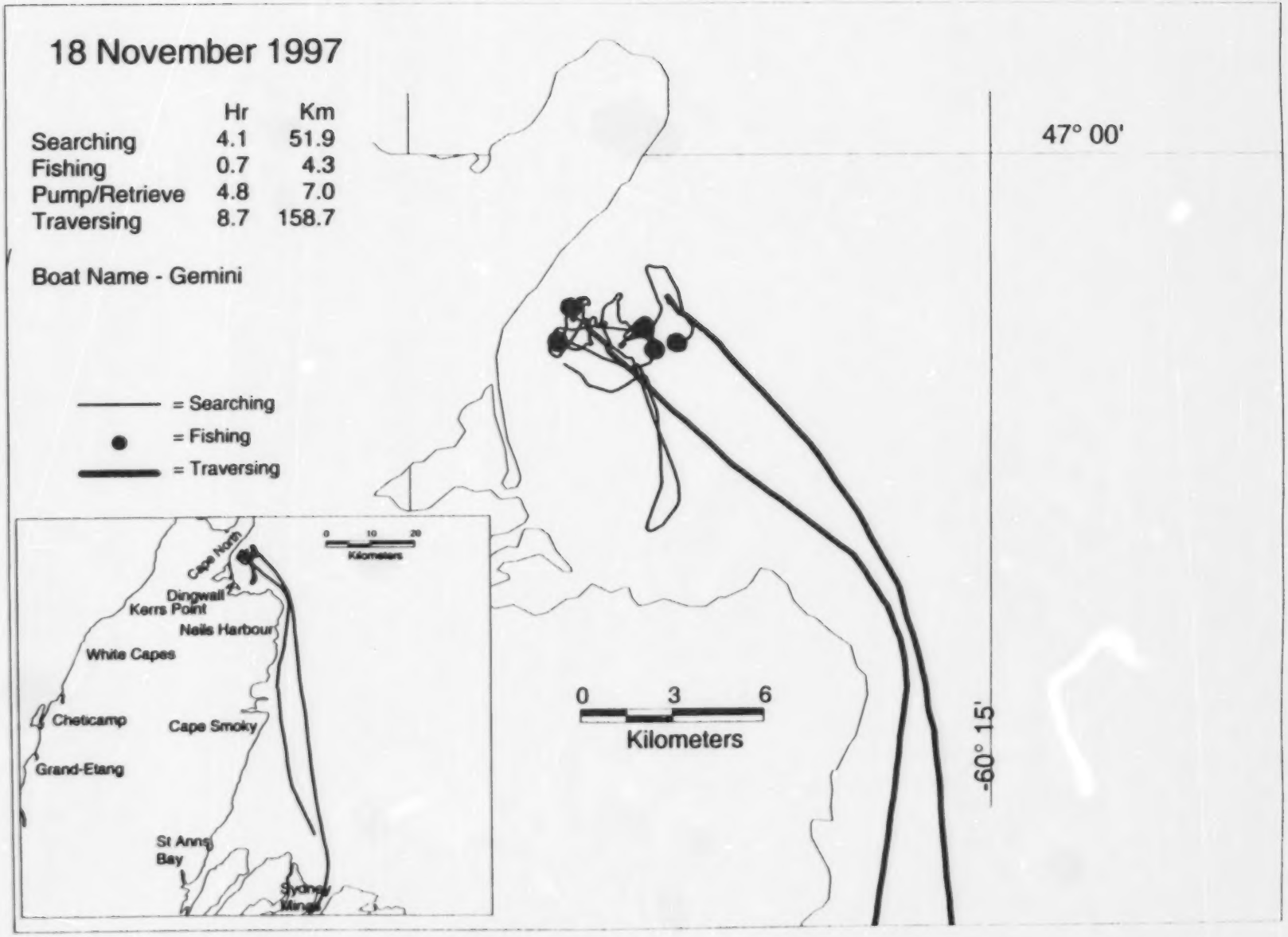

04 November 1997
Hr Km
Searching 1.6 18.5
Traversing 5.1 90.3
Boat Name - Gemini
= Searching
= Traversing
47° 00'
-60° 20'
-60° 00'
0 5 10
Kilometers
Kilometers

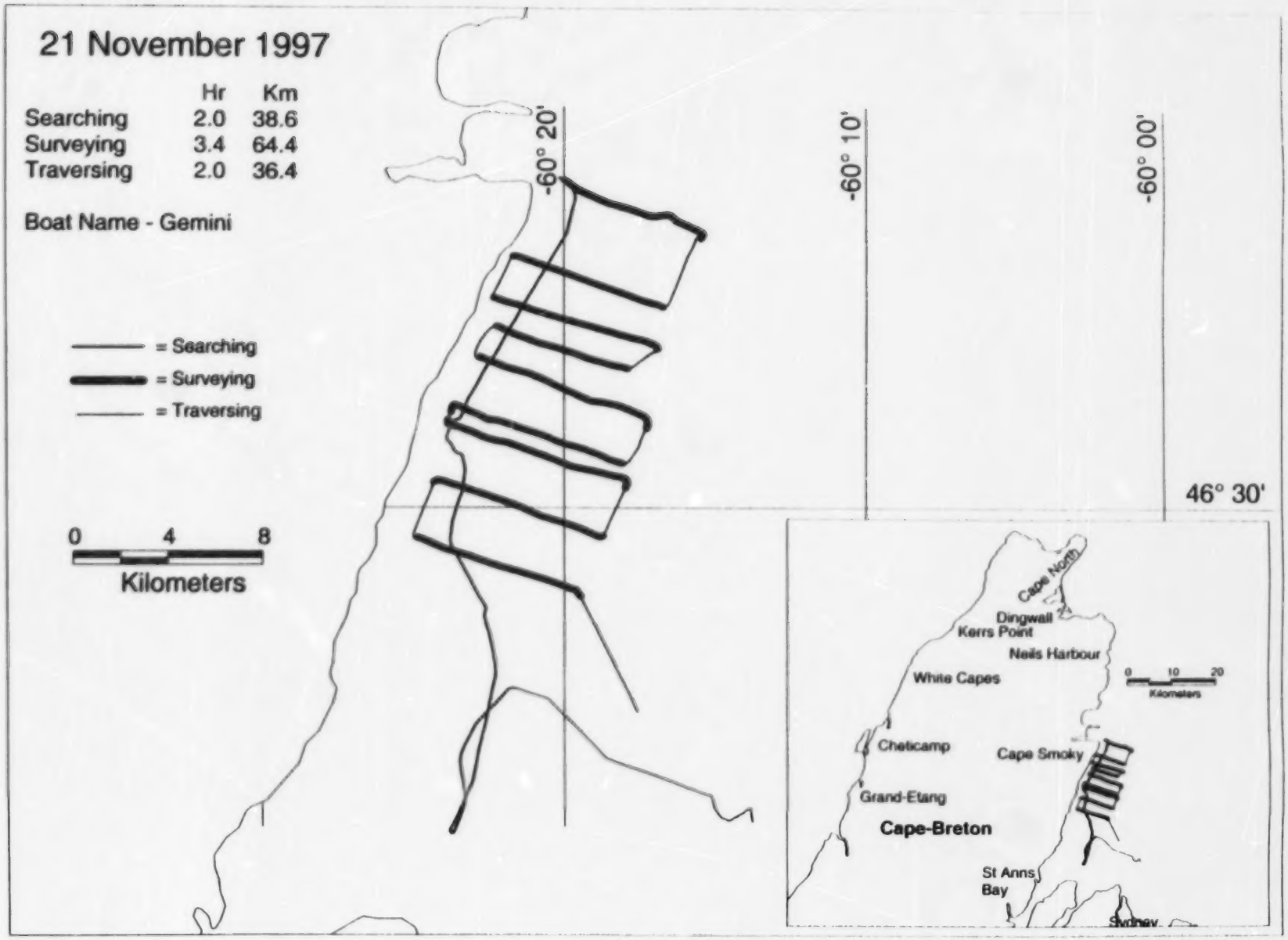

06 November 1997
Hr Km
Searching 5.8 74.1
Fishing 0.4 3.3
Pump/Retrieve 4.6 8.8
Traversing 8.3 153.1
Boat Name - Gemini
= Searching
= Fishing
= Traversing
47° 00'
-60° 20'
-60° 10'
46° 50'
0 3 6
Kilometers

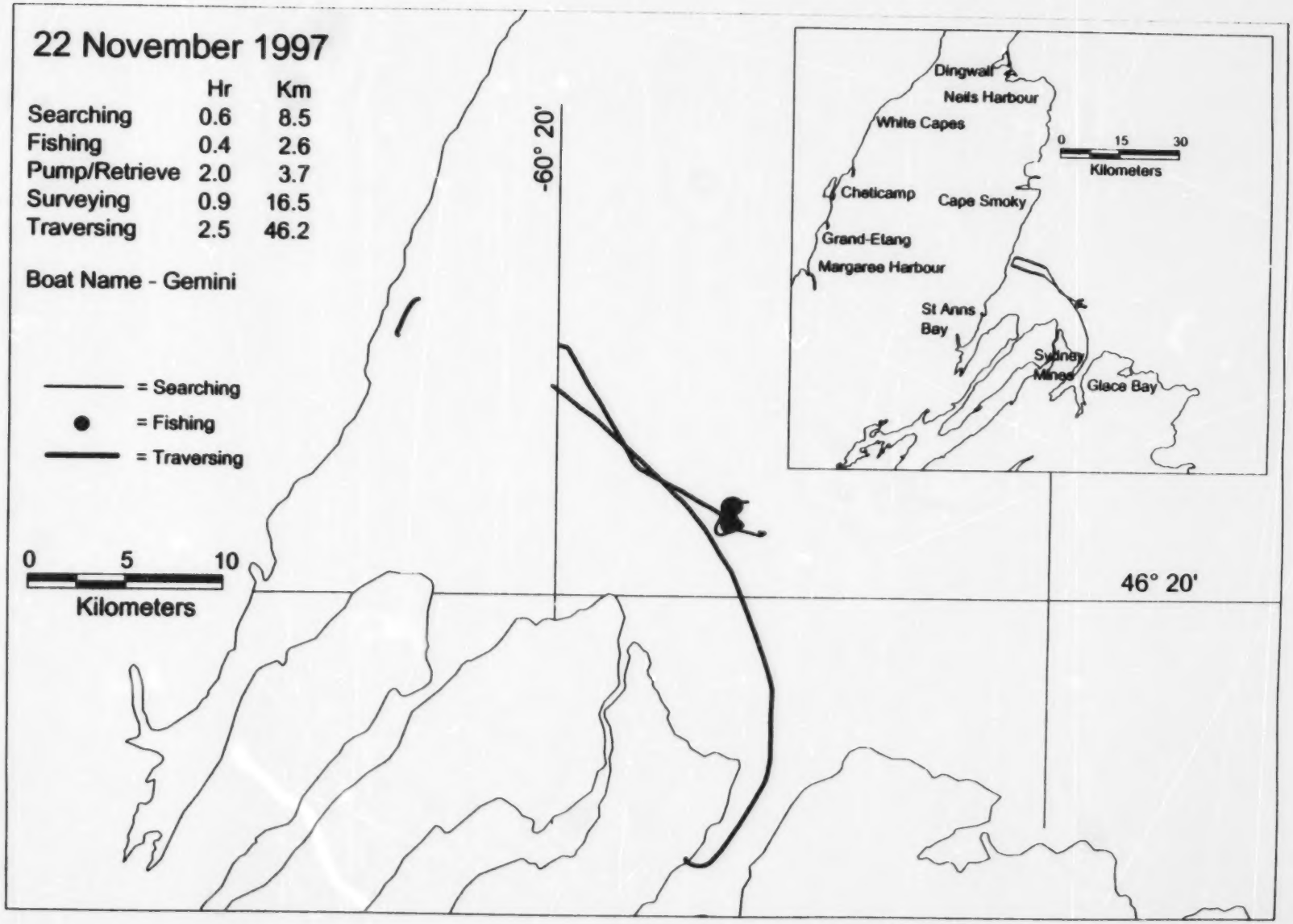

11 November 1997
Hr Km
Searching 7.1 98.9
Fishing 0.9 7.5
Pump/Retrieve 6.5 12.1
Traversing 8.9 130.3
Boat Name - Gemini
-60° 30'
-60° 20'
-60° 10'
47° 00'
= Searching
= Fishing
= Traversing
0 3 6
Kilometers

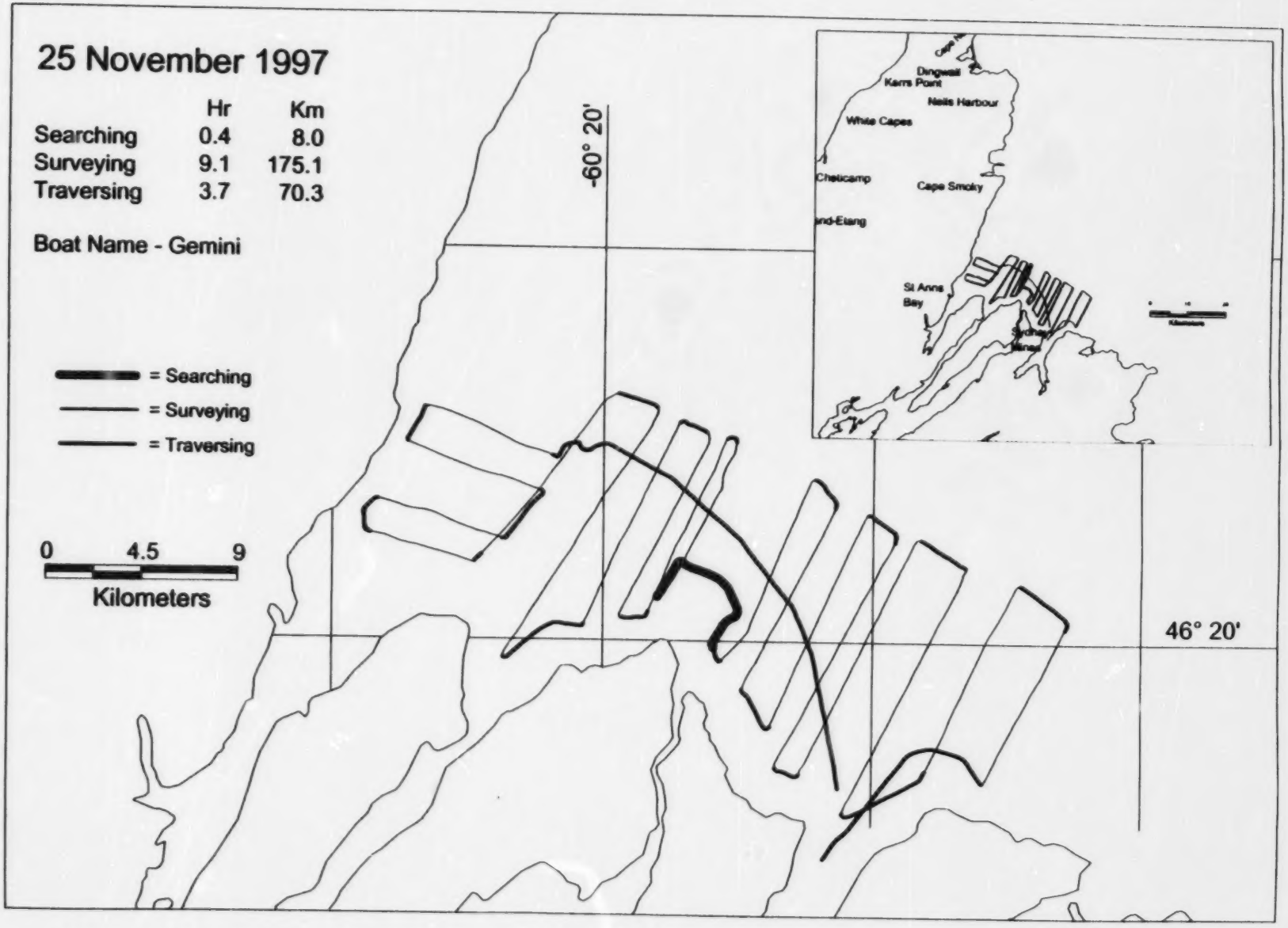

14 November 1997
Hr Km
Searching 8.0 72.6
Fishing 0.3 2.3
Pump/Retrieve 1.8 3.4
Traversing 9.2 161.0
Boat Name - Gemini
= Searching
= Fishing
= Traversing
-60° 20'
-60° 10'
47° 00'
0 3 6
Kilometers
0 10 20
Kilometers

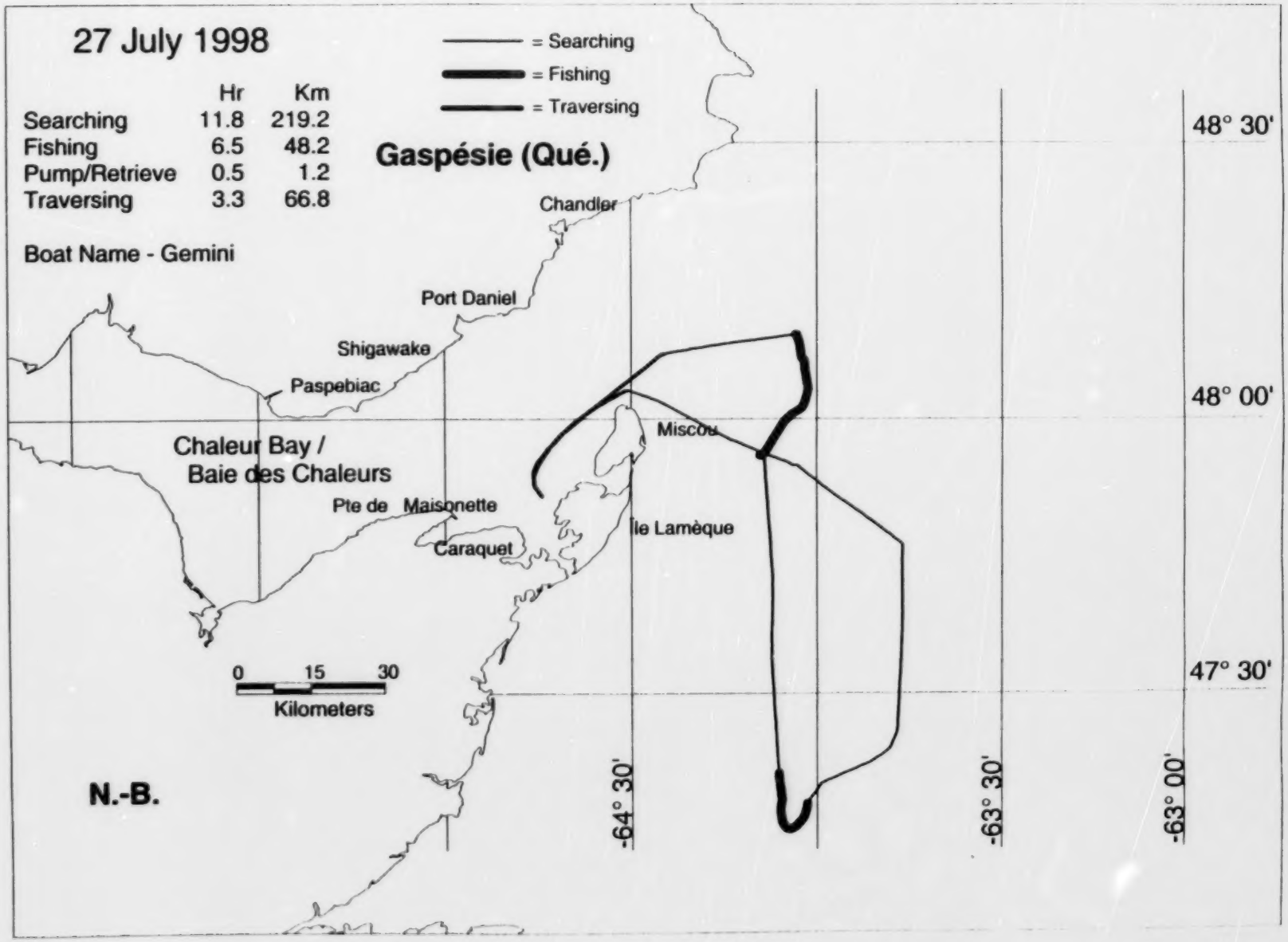

16 November 1997
Hr Km
Searching 5.3 61.5
Fishing 0.9 6.1
Pump/Retrieve 6.5 11.4
Traversing 8.0 150.0
Boat Name - Gemini
-60° 40'
-60° 20'
-60° 00'
47° 00'
= Searching
= Fishing
= Traversing
Neils Harbour
0 5 10
Kilometers

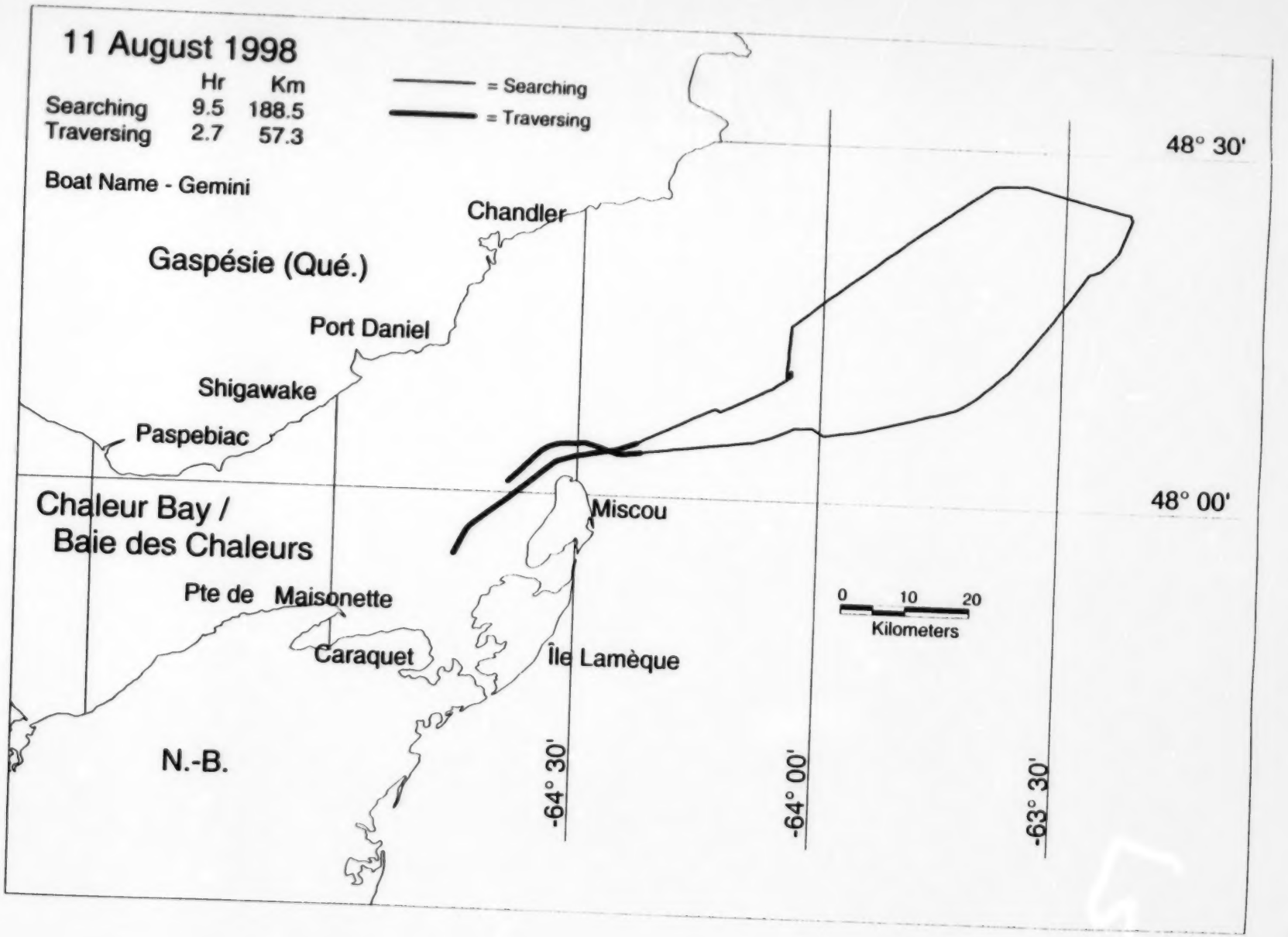

18 November 1997
Hr Km
Searching 4.1 51.9
Fishing 0.7 4.3
Pump/Retrieve 4.8 7.0
Traversing 8.7 158.7
Boat Name - Gemini
= Searching
= Fishing
= Traversing
47° 00'
-60° 15'
0 3 6
Kilometers
0 10 20
Kilometers
Cape North
Dingwall
Kerrs Point
Neils Harbour
White Capes
Cheticamp
Cape Smoky
Grand-Etang
St Anns Bay
Sydney Mines

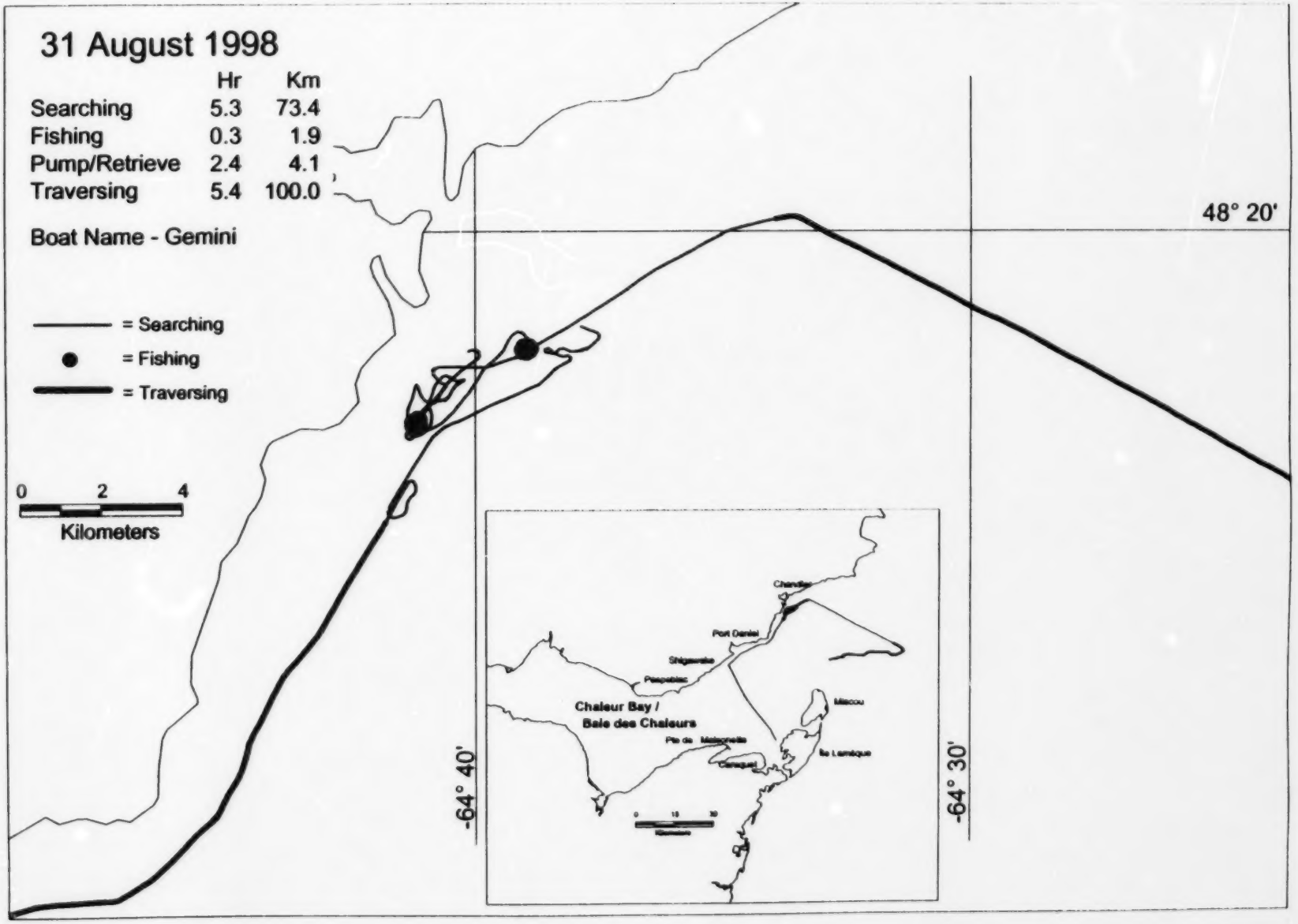

21 November 1997
Hr Km
Searching 2.0 38.6
Surveying 3.4 64.4
Traversing 2.0 36.4
Boat Name - Gemini
= Searching
= Surveying
= Traversing
0 4 8
Kilometers
-60° 20'
-60° 10'
-60° 00'
46° 30'
Cape North
Dingwall
Kerrs Point
Neils Harbour
White Capes
0 10 20
Kilometers
Cheticamp
Cape Smoky
Grand-Etang
Cape-Breton
St Anns
Bay
Sydney

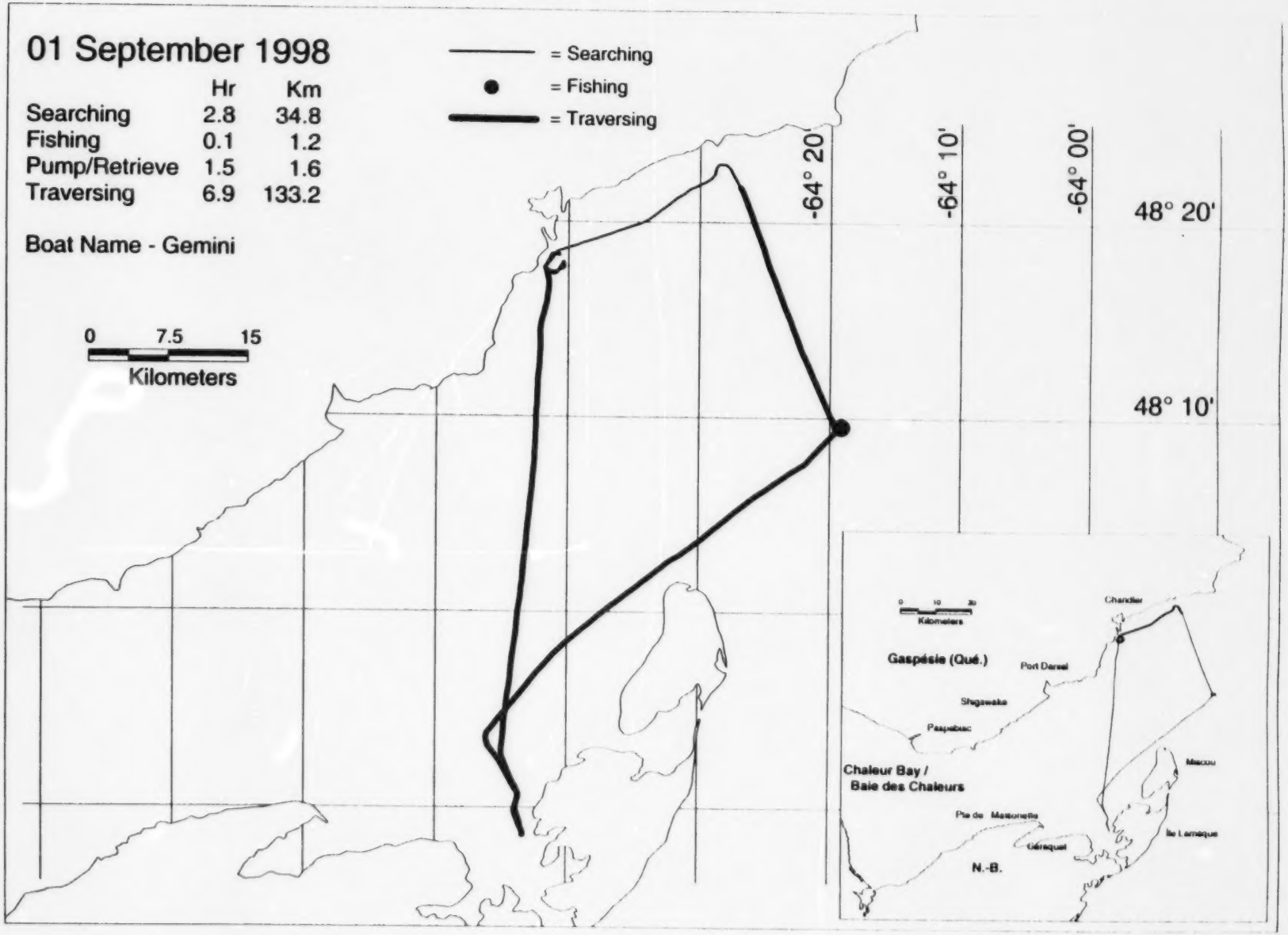

22 November 1997
Hr Km
Searching 0.6 8.5
Fishing 0.4 2.6
Pump/Retrieve 2.0 3.7
Surveying 0.9 16.5
Traversing 2.5 46.2
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
-60° 20'
46° 20'
Dingwall
Neils Harbour
White Capes
0 15 30
Kilometers
Cheticamp
Cape Smoky
Grand-Etang
Margaree Harbour
St Anns Bay
Sydney Mines
Glace Bay

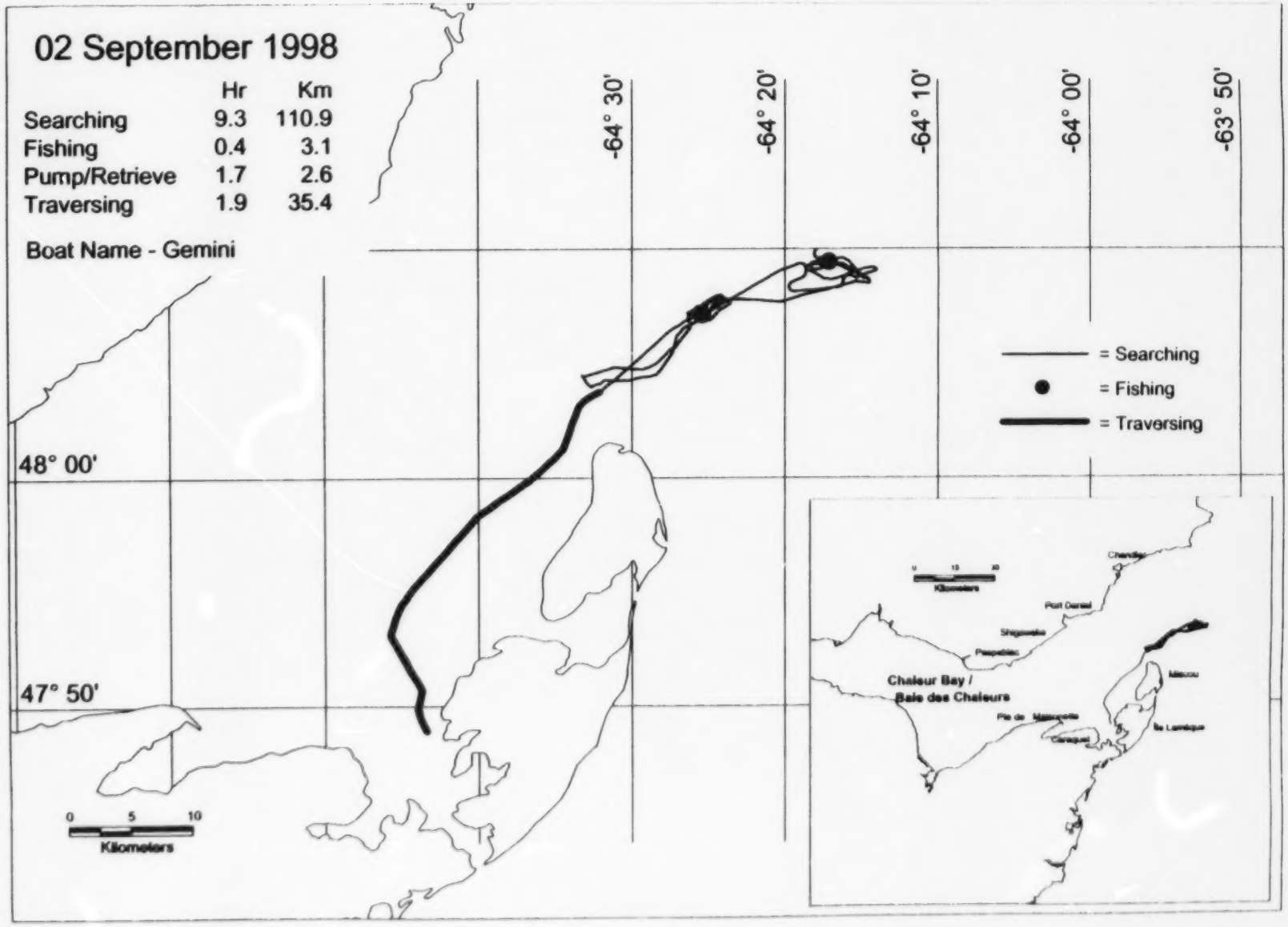

25 November 1997
Hr Km
Searching 0.4 8.0
Surveying 9.1 175.1
Traversing 3.7 70.3
Boat Name - Gemini
= Searching
= Surveying
= Traversing
0 4.5 9
Kilometers
-60° 20'
46° 20'
Dingwall
Kerrs Point
Neils Harbour
White Capes
Chéticamp
Cape Smoky
St Anns
Bay

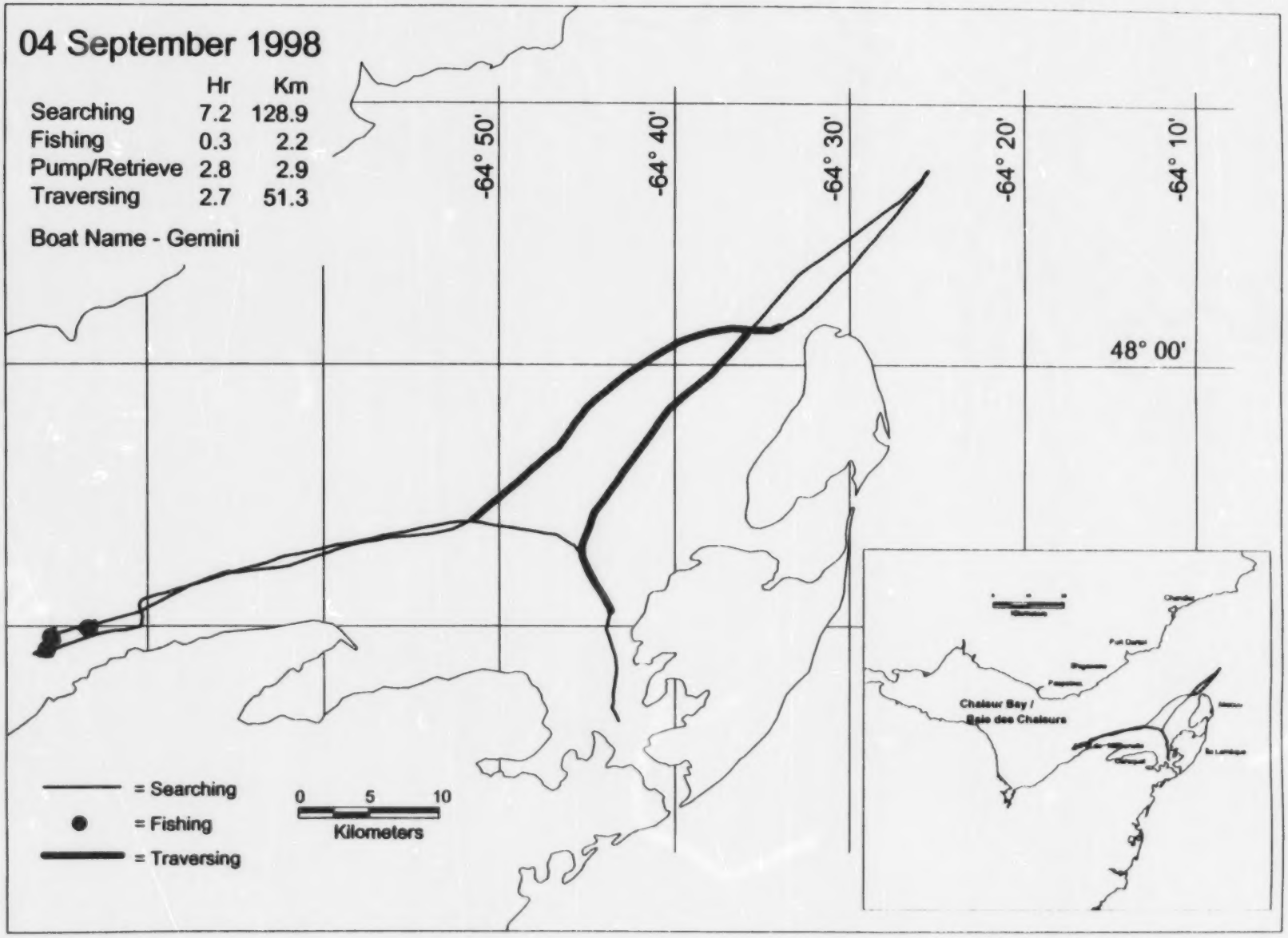

27 July 1998
= Searching
= Fishing
= Traversing
Hr Km
Searching 11.8 219.2
Fishing 6.5 48.2
Pump/Retrieve 0.5 1.2
Traversing 3.3 66.8
Boat Name - Gemini
Gaspésie (Qué.)
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonnette
Caraquet
Miscou
Ile Lamèque
0 15 30
Kilometers
N.-B.
48° 30'
48° 00'
47° 30'
-64° 30'
-63° 30'
-63° 00'

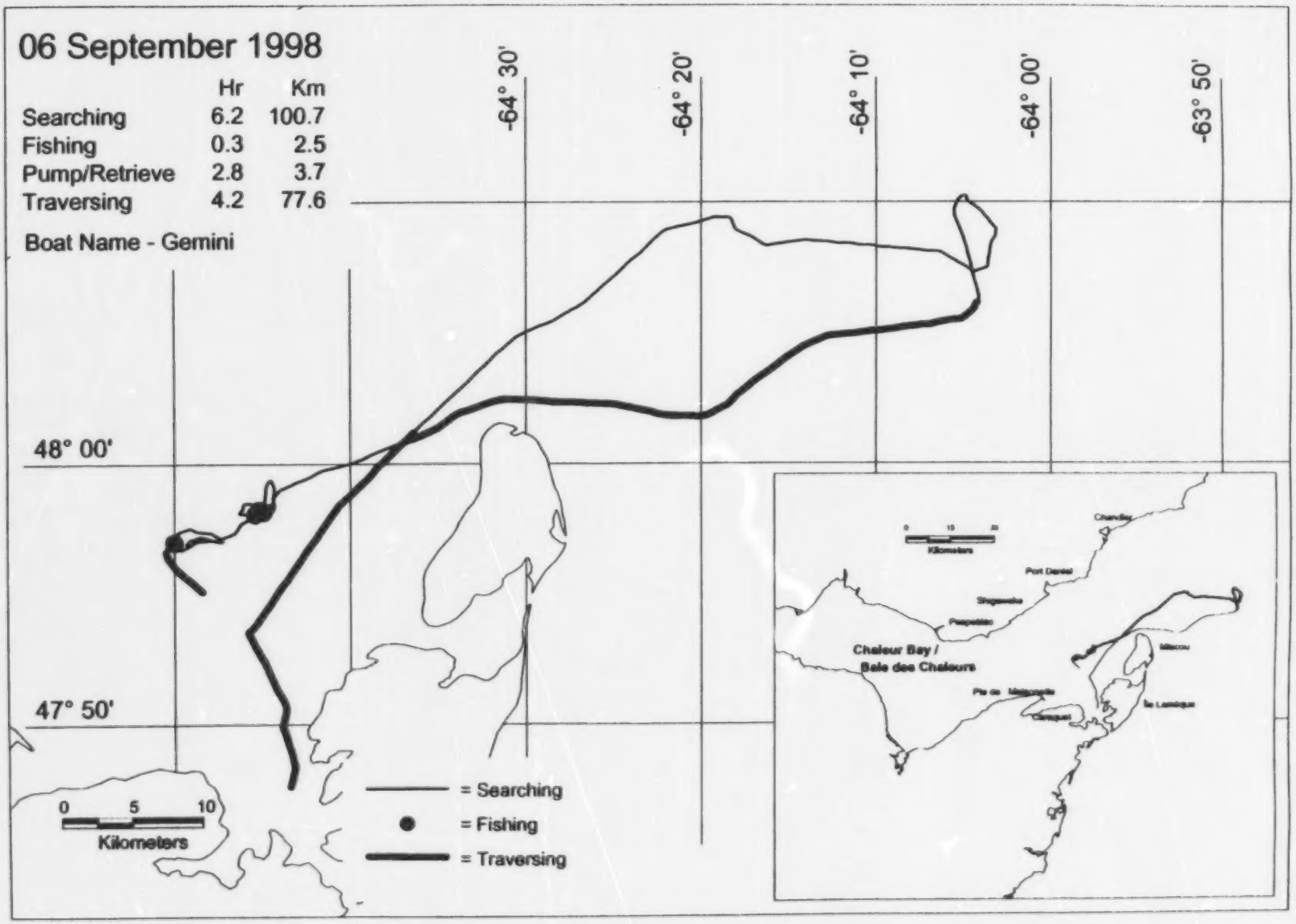

11 August 1998
Hr Km
Searching 9.5 188.5
Traversing 2.7 57.3
= Searching
= Traversing
Boat Name - Gemini
48° 30'
Chandler
Gaspésie (Qué.)
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
48° 00'
Miscou
Pte de Maisonette
Caraquet
Île Lamèque
0 10 20
Kilometers
N.-B.
-64° 30'
-64° 00'
-63° 30'

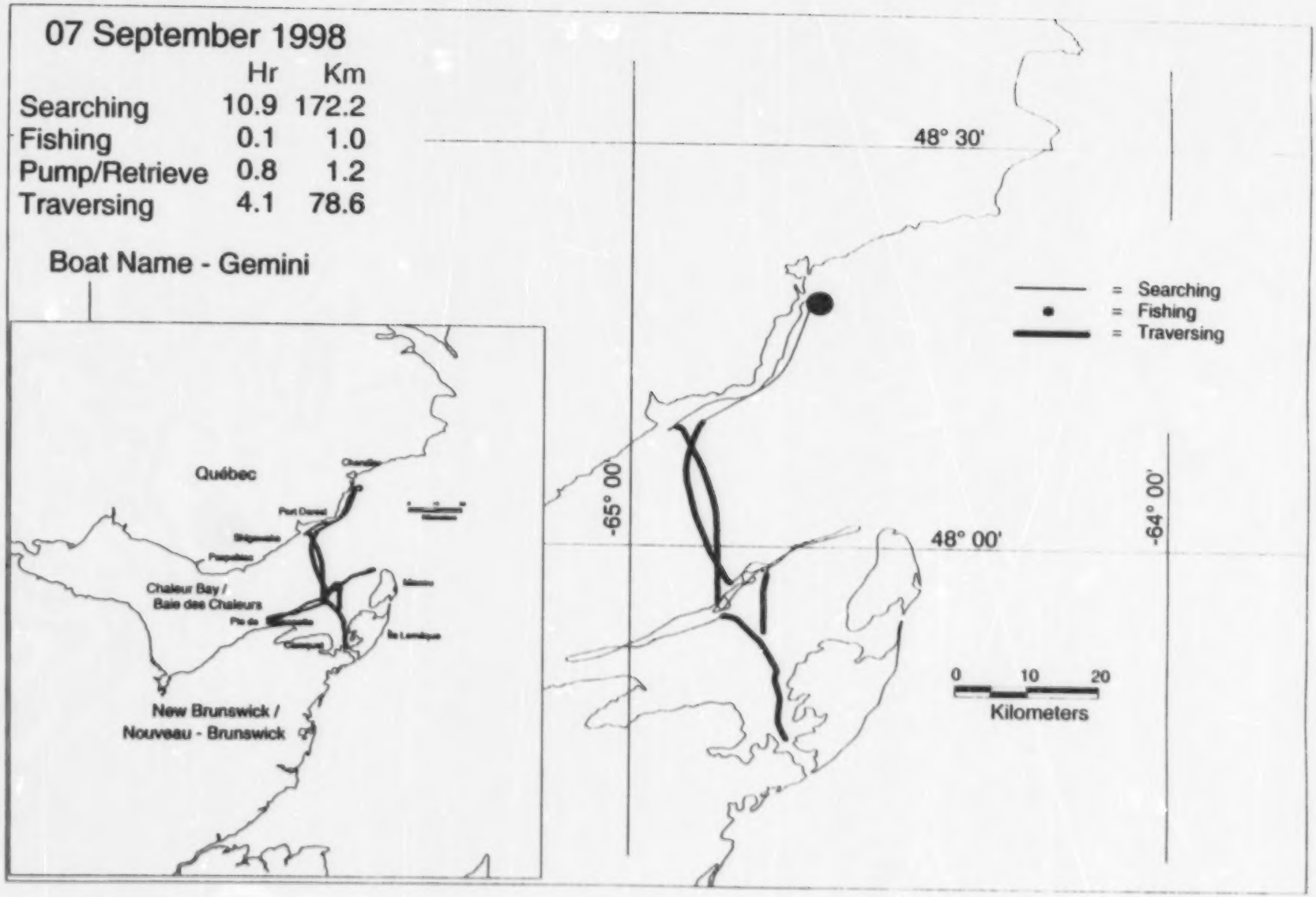

31 August 1998
Hr Km
Searching 5.3 73.4
Fishing 0.3 1.9
Pump/Retrieve 2.4 4.1
Traversing 5.4 100.0
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 2 4
Kilometers
48° 20'
-64° 40'
-64° 30'
Chaleur Bay /
Baie des Chaleurs

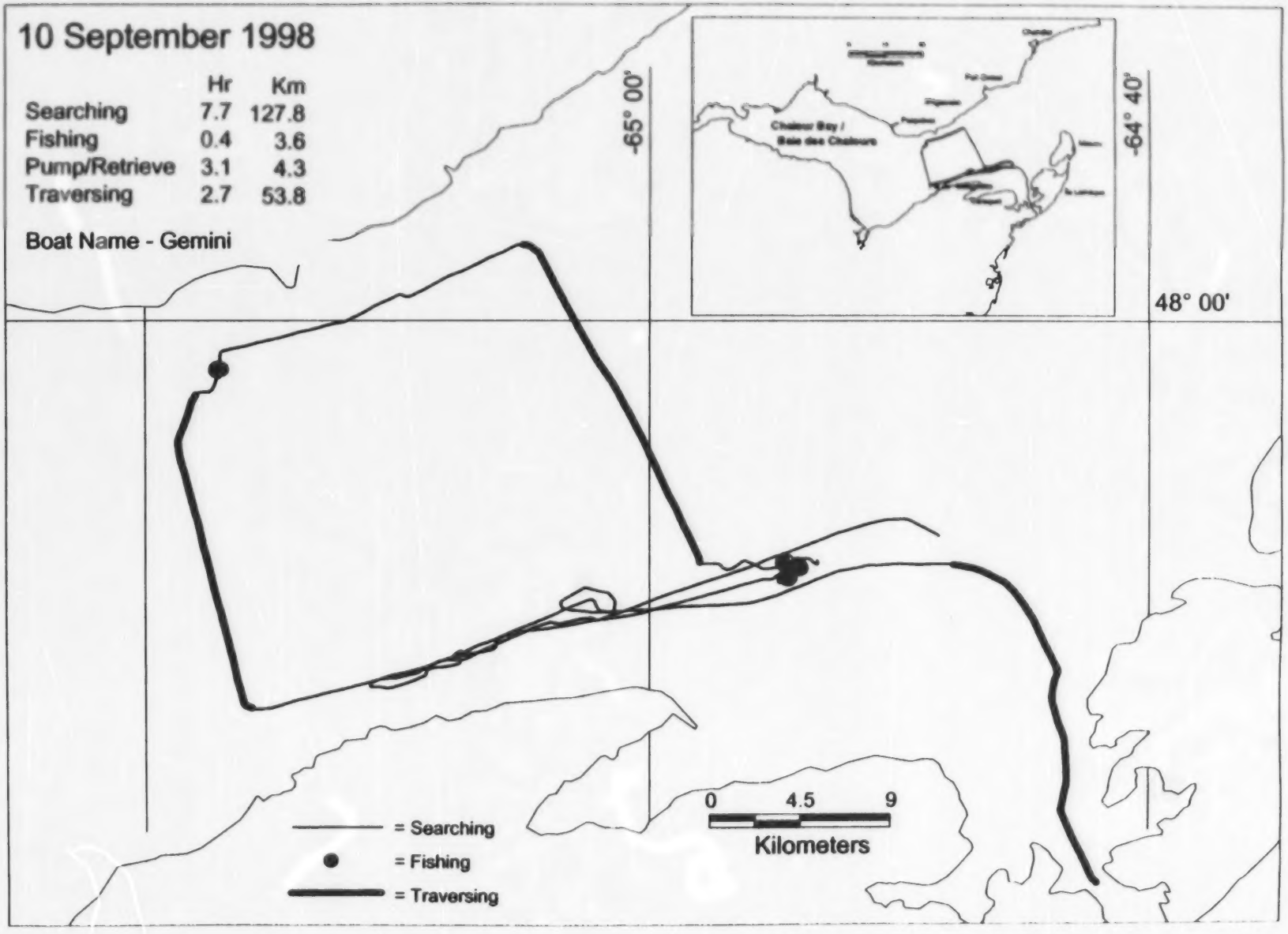

01 September 1998
Hr Km
Searching 2.8 34.8
Fishing 0.1 1.2
Pump/Retrieve 1.5 1.6
Traversing 6.9 133.2
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 7.5 15
Kilometers
-64° 20'
-64° 10'
-64° 00'
48° 20'
48° 10'
Gaspésie (Qué.)
Port Daniel
Shigawake
Paspebiac
Chandler
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonnette
Carequet
N.-B.
Miscou
Île Lameque

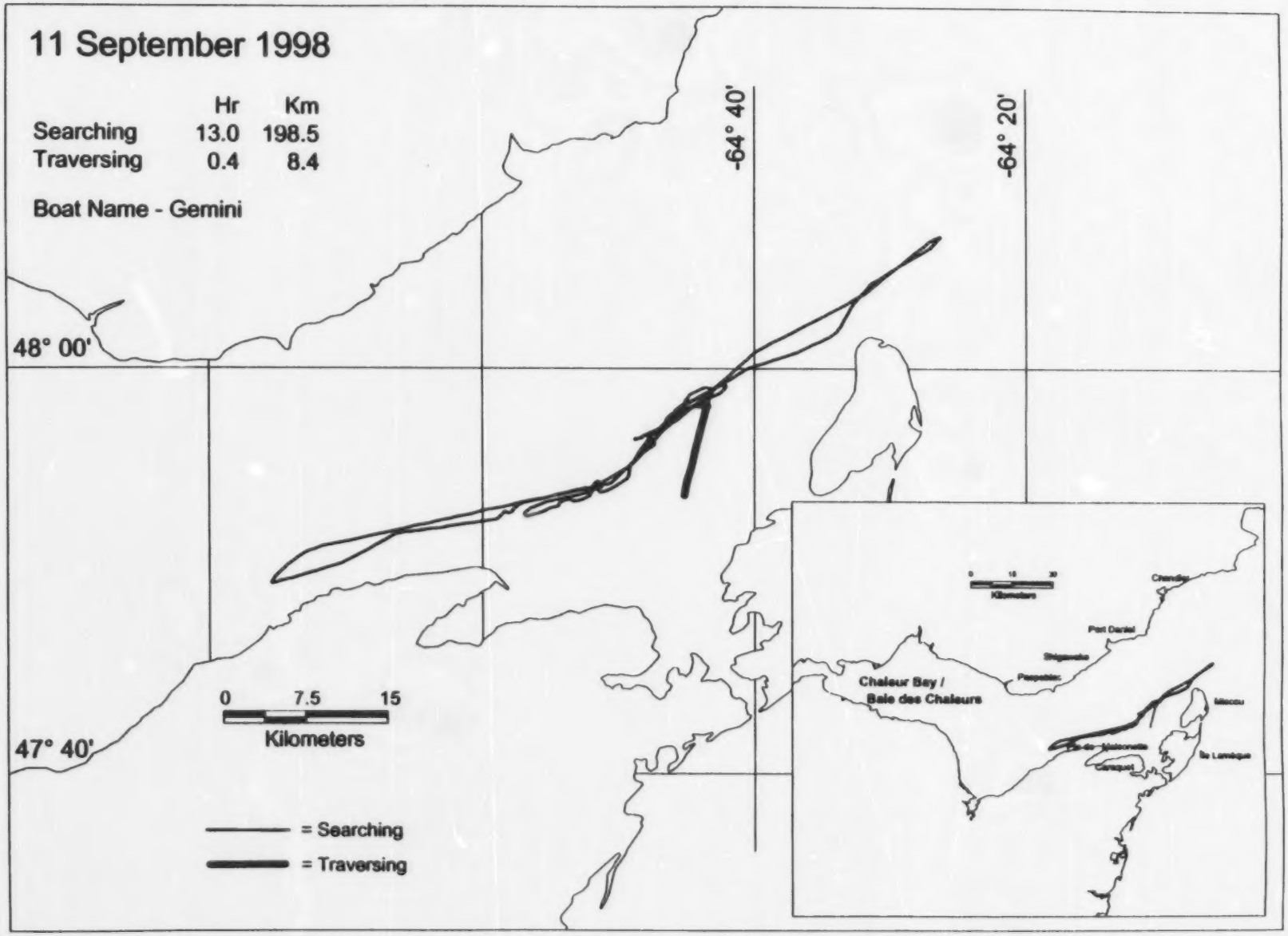

02 September 1998
Hr Km
Searching 9.3 110.9
Fishing 0.4 3.1
Pump/Retrieve 1.7 2.6
Traversing 1.9 35.4
Boat Name - Gemini
-64° 30'
-64° 20'
-64° 10'
-64° 00'
-63° 50'
48° 00'
47° 50'
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
Chaleur Bay /
Baie des Chaleurs

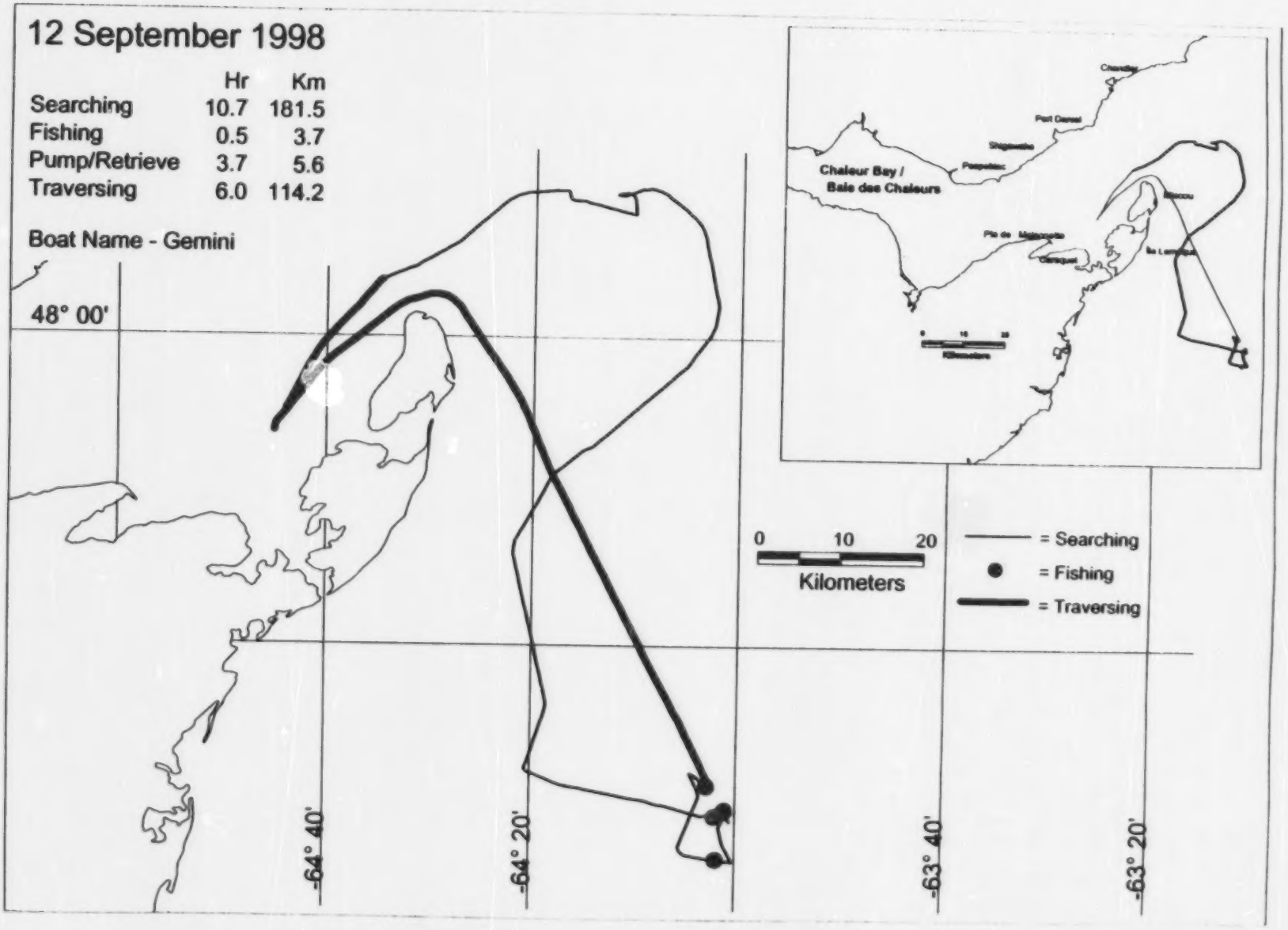

04 September 1998
Hr Km
Searching 7.2 128.9
Fishing 0.3 2.2
Pump/Retrieve 2.8 2.9
Traversing 2.7 51.3
Boat Name - Gemini
-64° 50'
-64° 40'
-64° 30'
-64° 20'
-64° 10'
48° 00'
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
Chaleur Bay /
Baie des Chaleurs

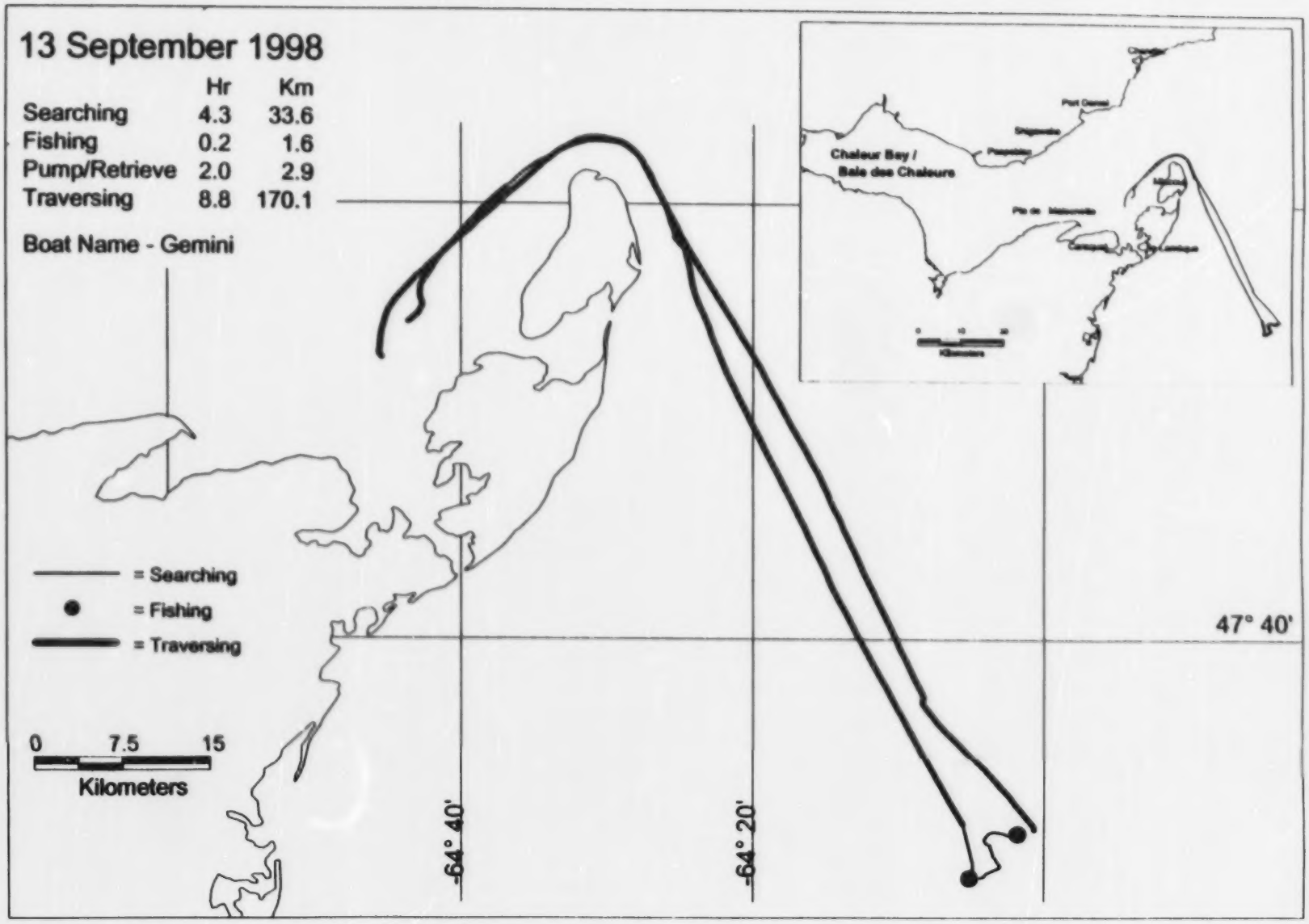

06 September 1998
Hr Km
Searching 6.2 100.7
Fishing 0.3 2.5
Pump/Retrieve 2.8 3.7
Traversing 4.2 77.6
Boat Name - Gemini
-64° 30'
-64° 20'
-64° 10'
-64° 00'
-63° 50'
48° 00'
47° 50'
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
Chaleur Bay /
Baie des Chaleurs

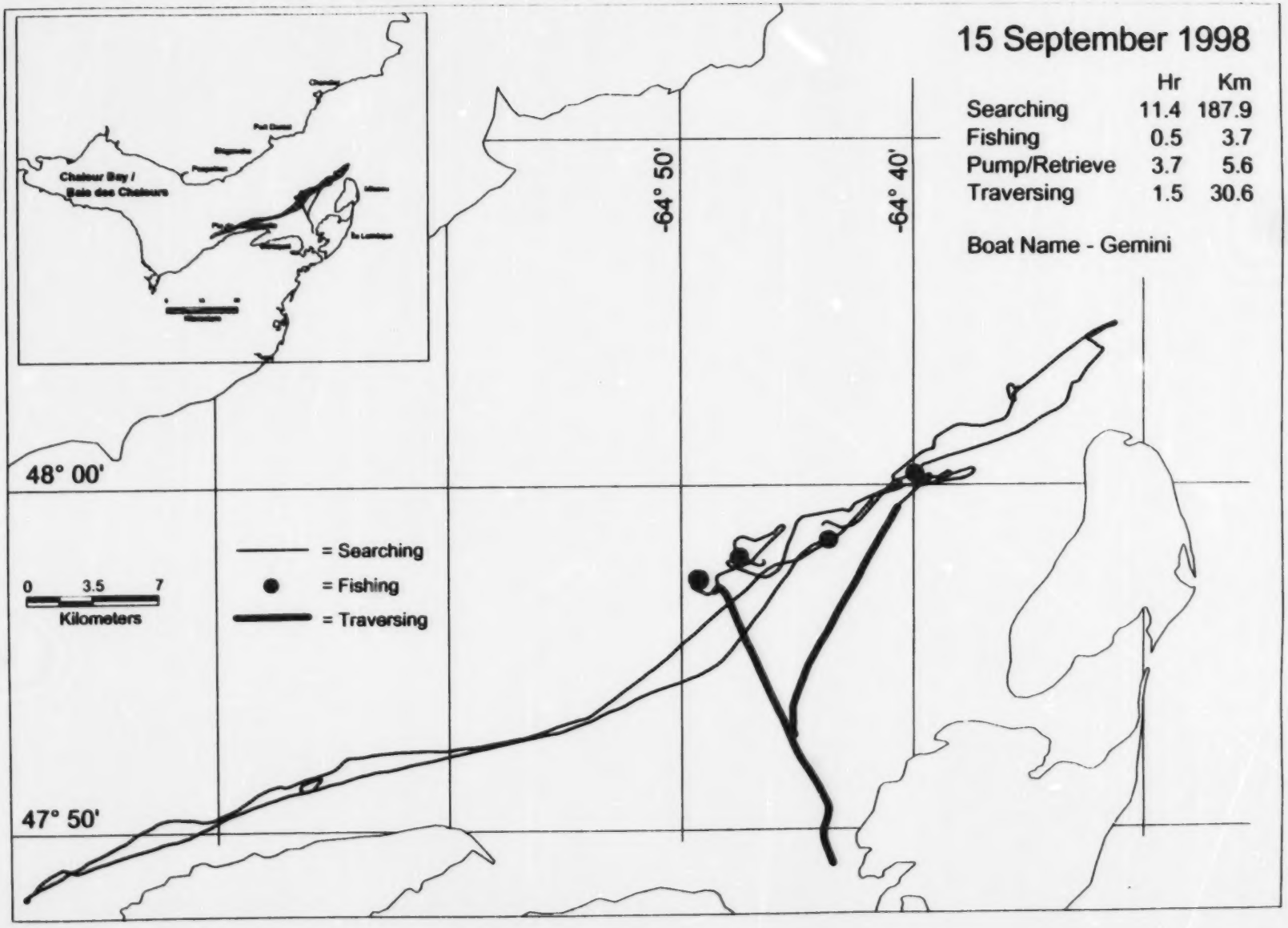

07 September 1998
Hr Km
Searching 10.9 172.2
Fishing 0.1 1.0
Pump/Retrieve 0.8 1.2
Traversing 4.1 78.6
Boat Name - Gemini
Québec
Chaleur Bay /
Baie des Chaleurs
New Brunswick /
Nouveau - Brunswick
48° 30'
48° 00'
-65° 00'
-64° 00'
= Searching
= Fishing
= Traversing
0 10 20
Kilometers

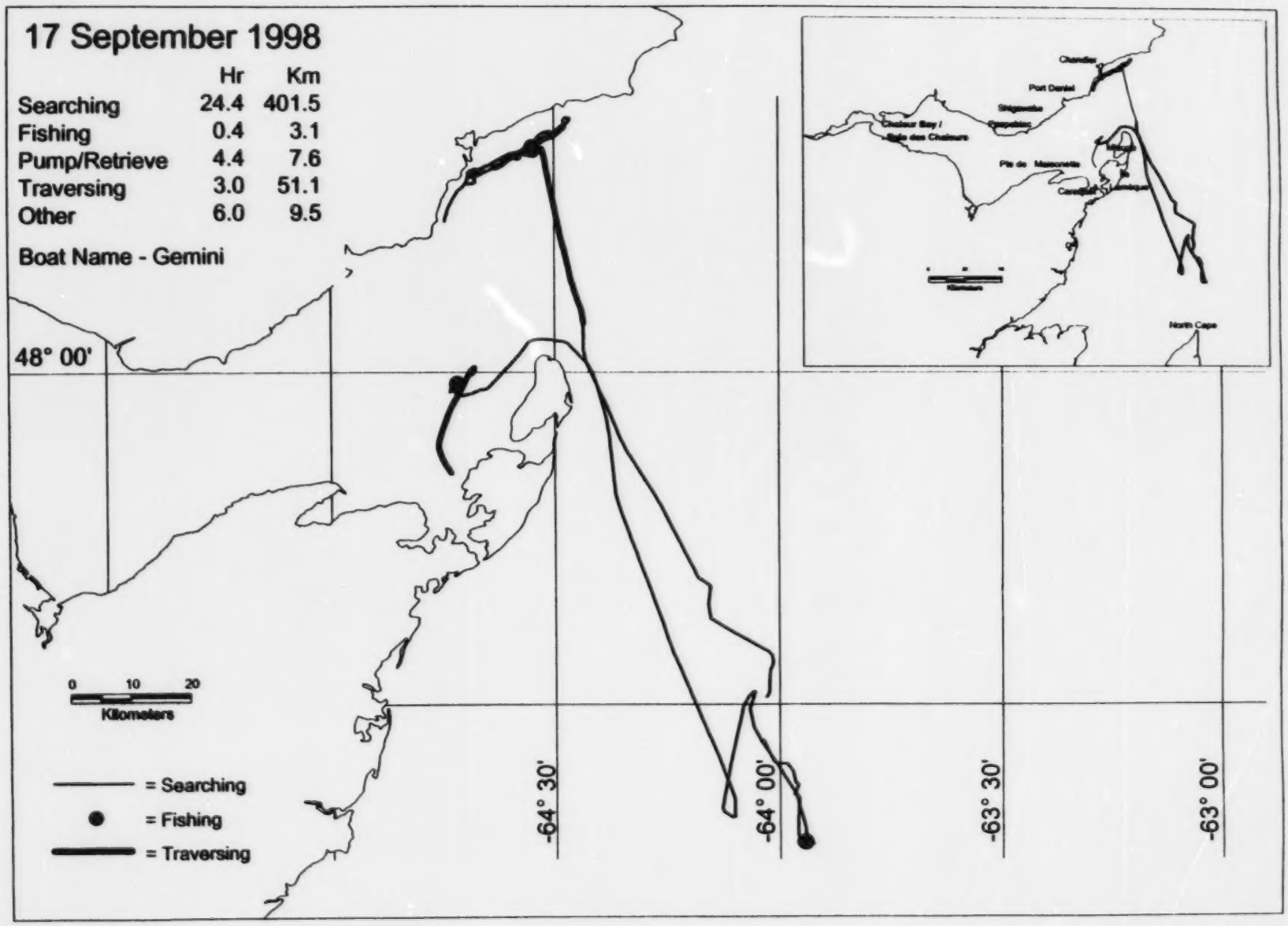

10 September 1998
Hr Km
Searching 7.7 127.8
Fishing 0.4 3.6
Pump/Retrieve 3.1 4.3
Traversing 2.7 53.8
Boat Name - Gemini
-65° 00'
-64° 40'
48° 00'
Chaleur Bay / Baie des Chaleurs
= Searching
= Fishing
= Traversing
0 4.5 9
Kilometers

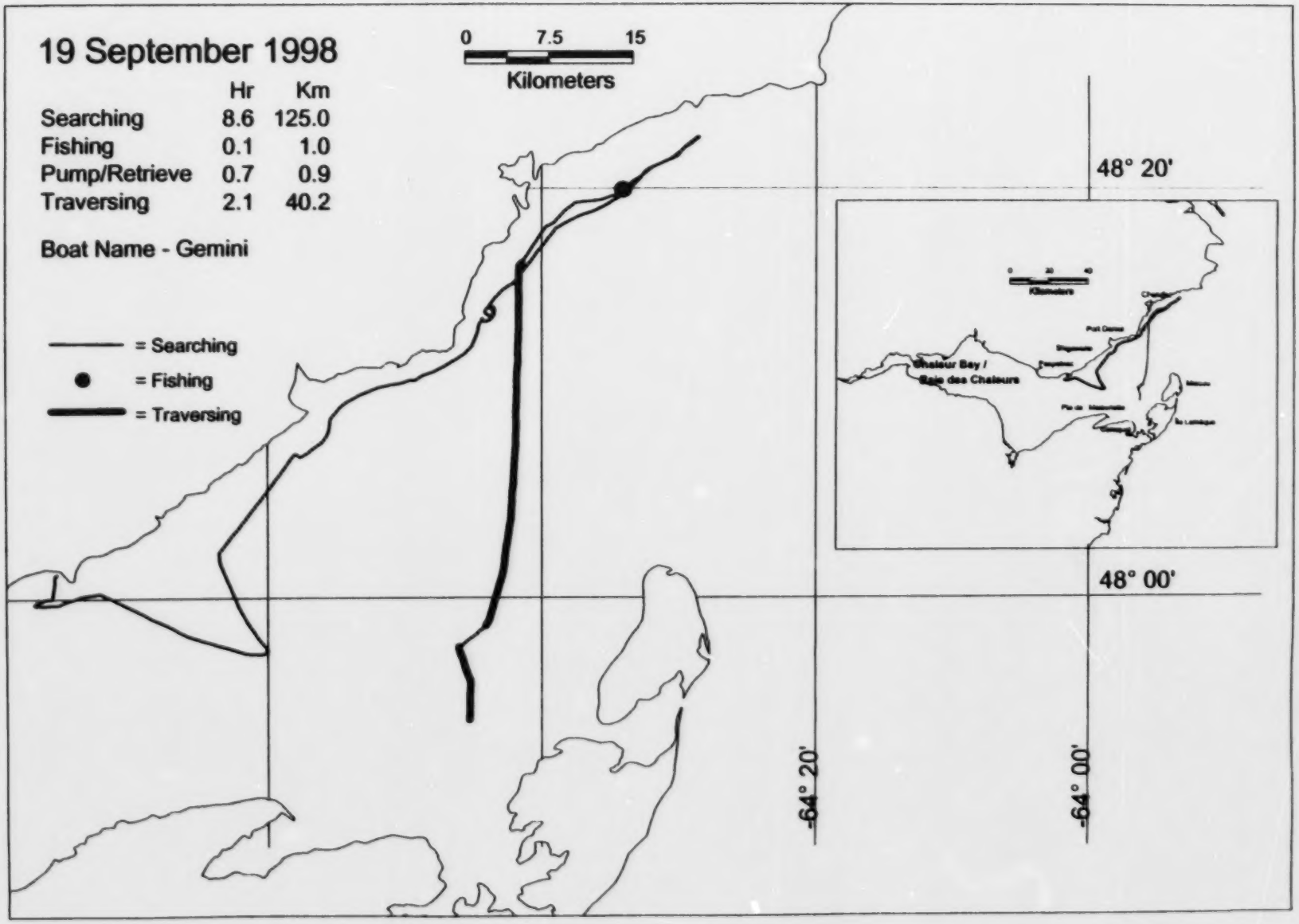

11 September 1998
Hr Km
Searching 13.0 198.5
Traversing 0.4 8.4
Boat Name - Gemini
-64° 40'
-64° 20'
48° 00'
47° 40'
0 7.5 15
Kilometers
= Searching
= Traversing
Chaleur Bay /
Baie des Chaleurs

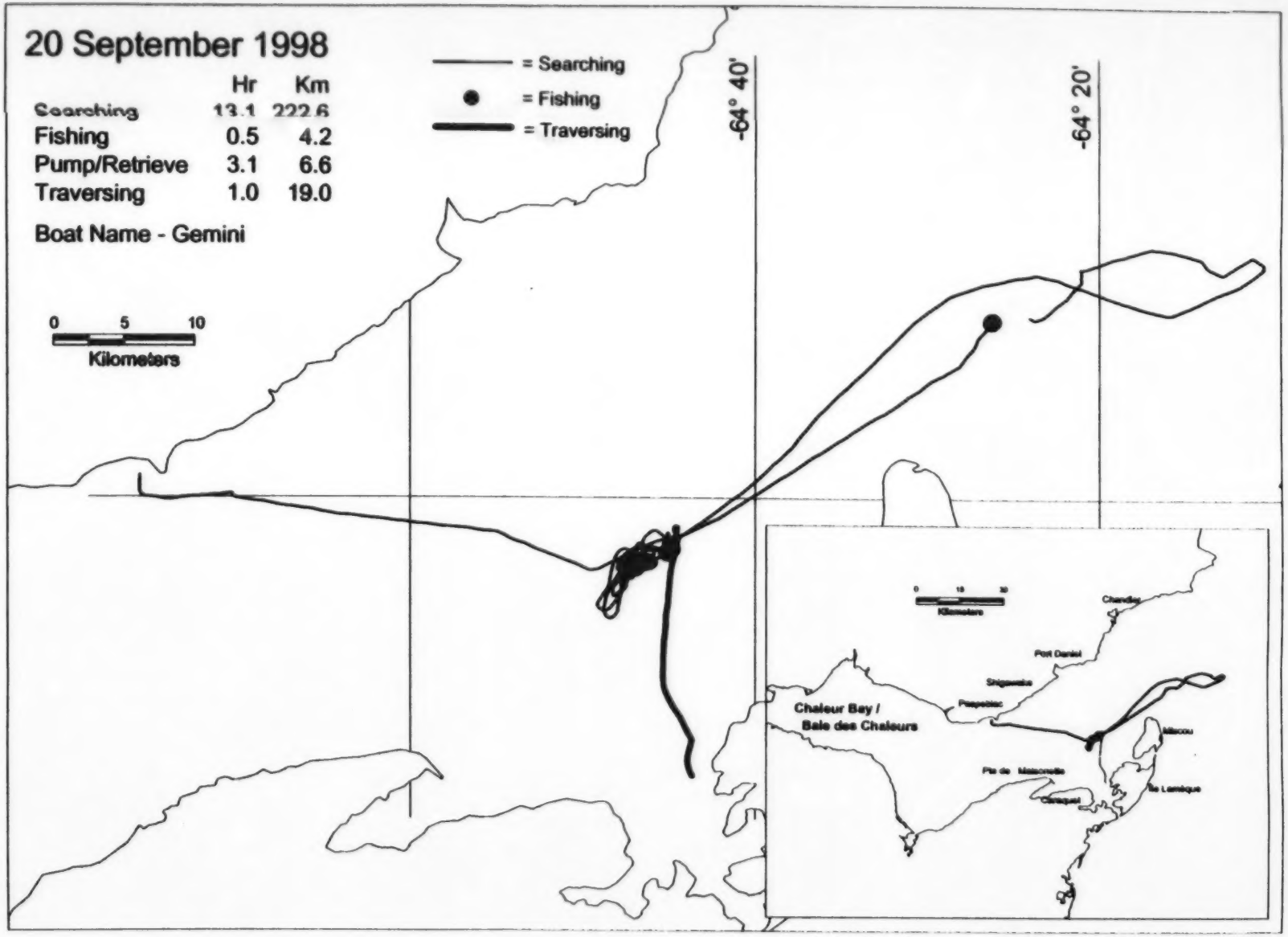

12 September 1998
Hr Km
Searching 10.7 181.5
Fishing 0.5 3.7
Pump/Retrieve 3.7 5.6
Traversing 6.0 114.2
Boat Name - Gemini
48° 00'
-64° 40'
-64° 20'
-63° 40'
-63° 20'
Chaleur Bay /
Baie des Chaleurs
0 10 20
Kilometers
= Searching
= Fishing
= Traversing

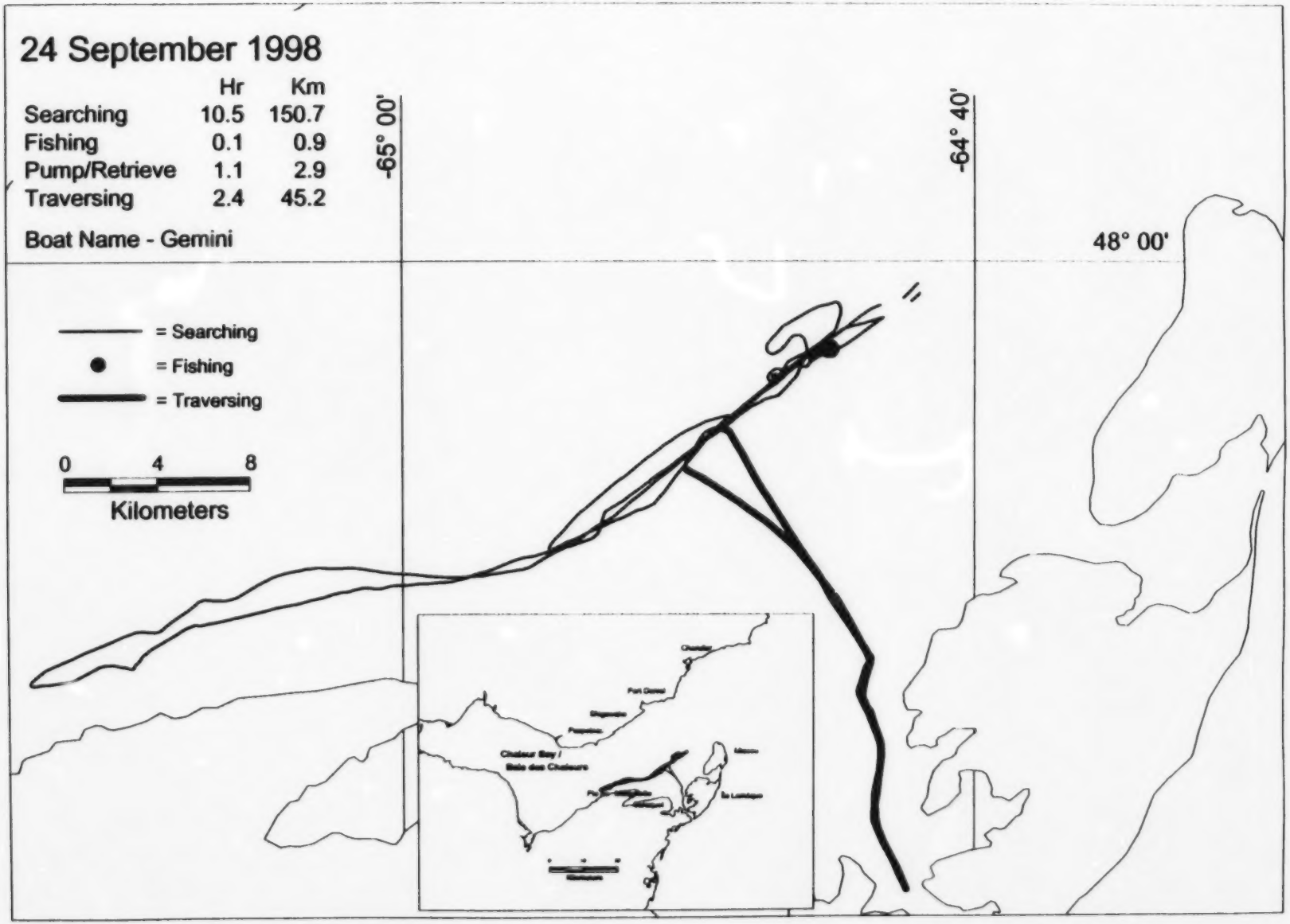

13 September 1998
Hr Km
Searching 4.3 33.6
Fishing 0.2 1.6
Pump/Retrieve 2.0 2.9
Traversing 8.8 170.1
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 7.5 15
Kilometers
-64° 40'
-64° 20'
47° 40'
Chaleur Bay /
Baie des Chaleurs

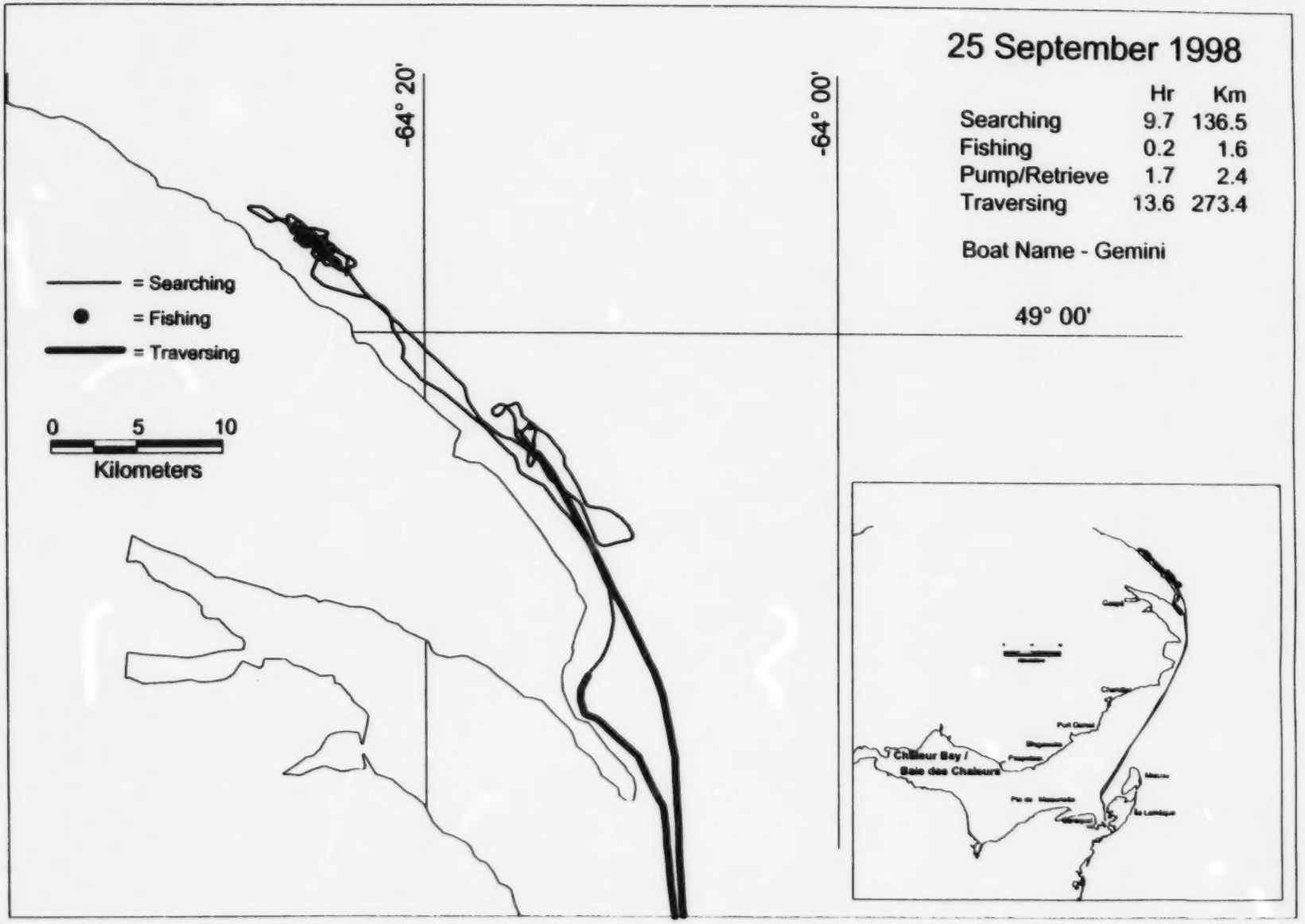

15 September 1998
Hr Km
Searching 11.4 187.9
Fishing 0.5 3.7
Pump/Retrieve 3.7 5.6
Traversing 1.5 30.6
Boat Name - Gemini
-64° 50'
-64° 40'
48° 00'
47° 50'
= Searching
= Fishing
= Traversing
0 3.5 7
Kilometers
Chaleur Bay /
Baie des Chaleurs

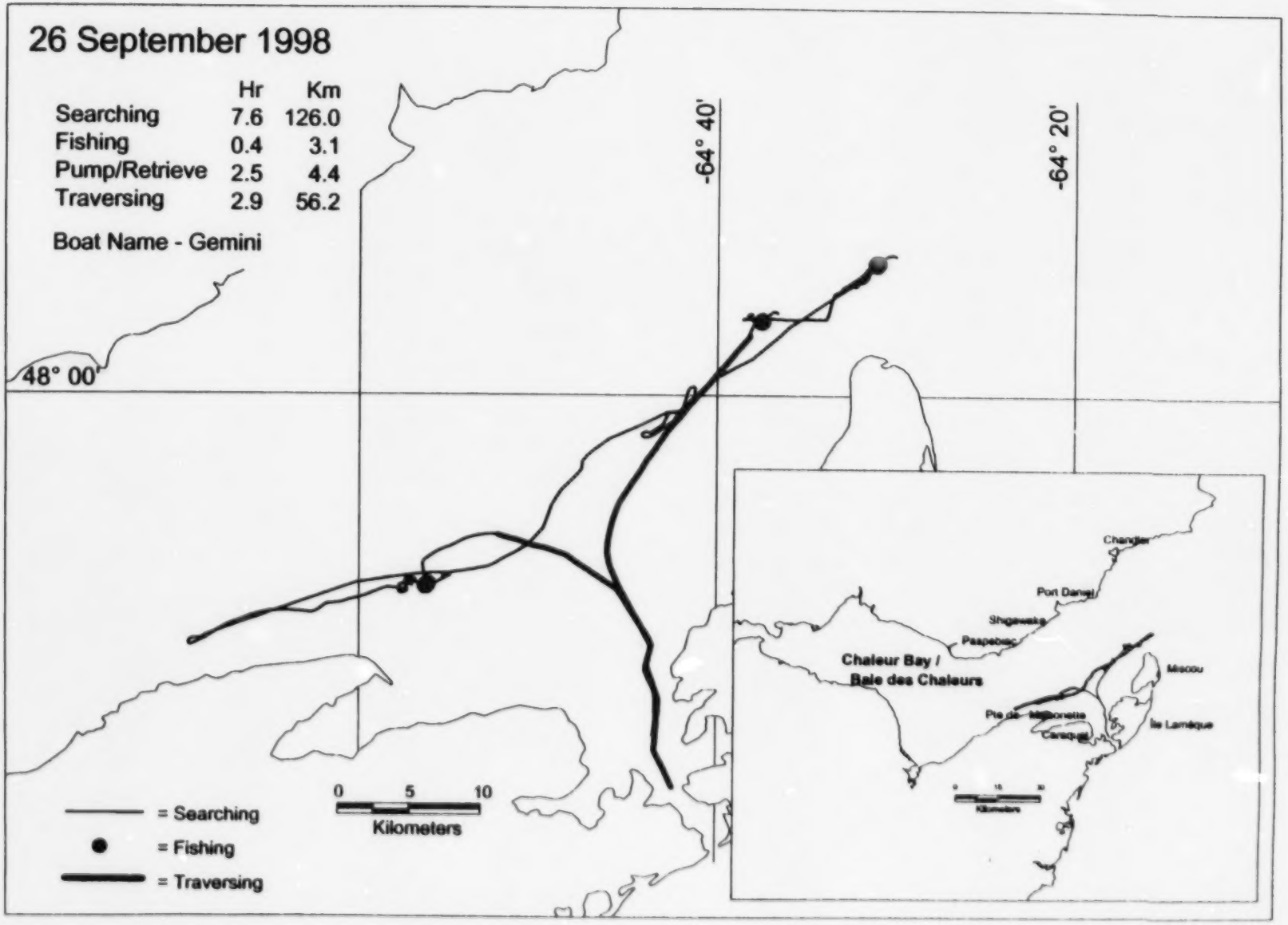

17 September 1998
Hr Km
Searching 24.4 401.5
Fishing 0.4 3.1
Pump/Retrieve 4.4 7.6
Traversing 3.0 51.1
Other 6.0 9.5
Boat Name - Gemini
48° 00'
0 10 20
Kilometers
= Searching
= Fishing
= Traversing
-64° 30'
-64° 00'
-63° 30'
-63° 00'
North Cape

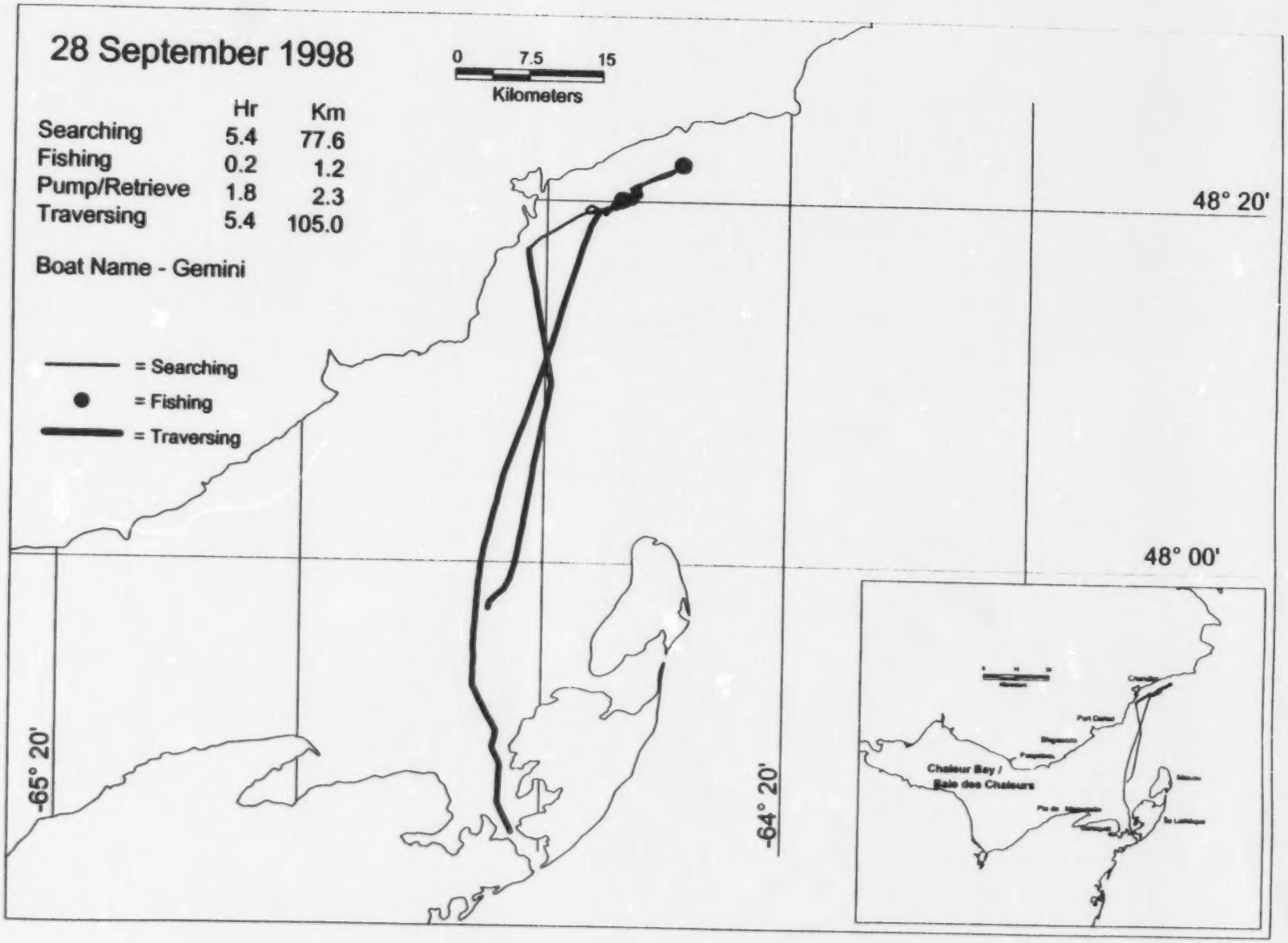

19 September 1998
Hr Km
Searching 8.6 125.0
Fishing 0.1 1.0
Pump/Retrieve 0.7 0.9
Traversing 2.1 40.2
Boat Name - Gemini
= Searching
= Fishing
= Traversing
0 7.5 15
Kilometers
48° 20'
48° 00'
-64° 20'
-64° 00'
Chaleur Bay /
Baie des Chaleurs

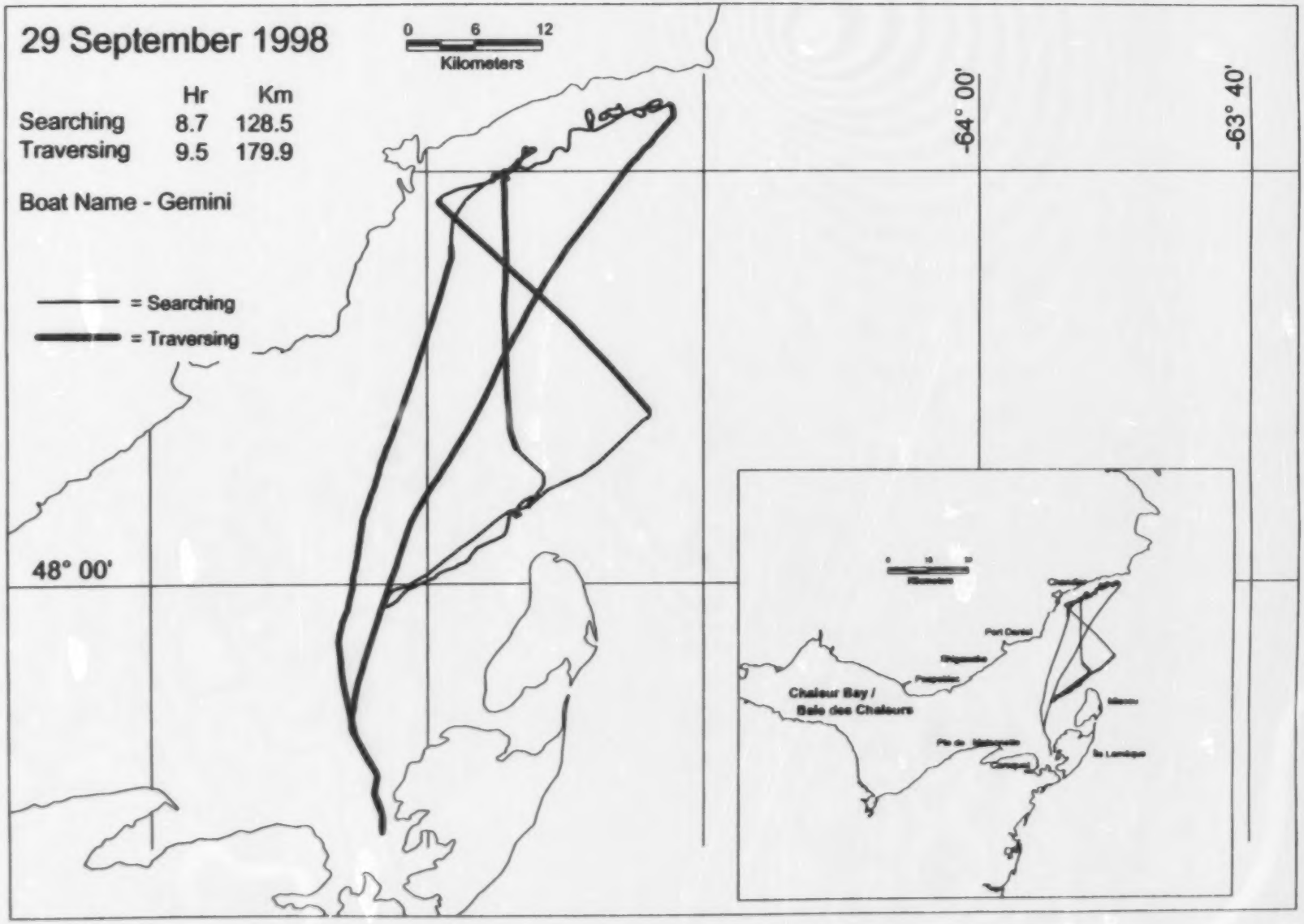

20 September 1998
Hr Km
Searching 13.1 222.6
Fishing 0.5 4.2
Pump/Retrieve 3.1 6.6
Traversing 1.0 19.0
Boat Name - Gemini
= Searching
= Fishing
= Traversing
-64° 40'
-64° 20'
0 5 10
Kilometers
Chaleur Bay /
Baie des Chaleurs

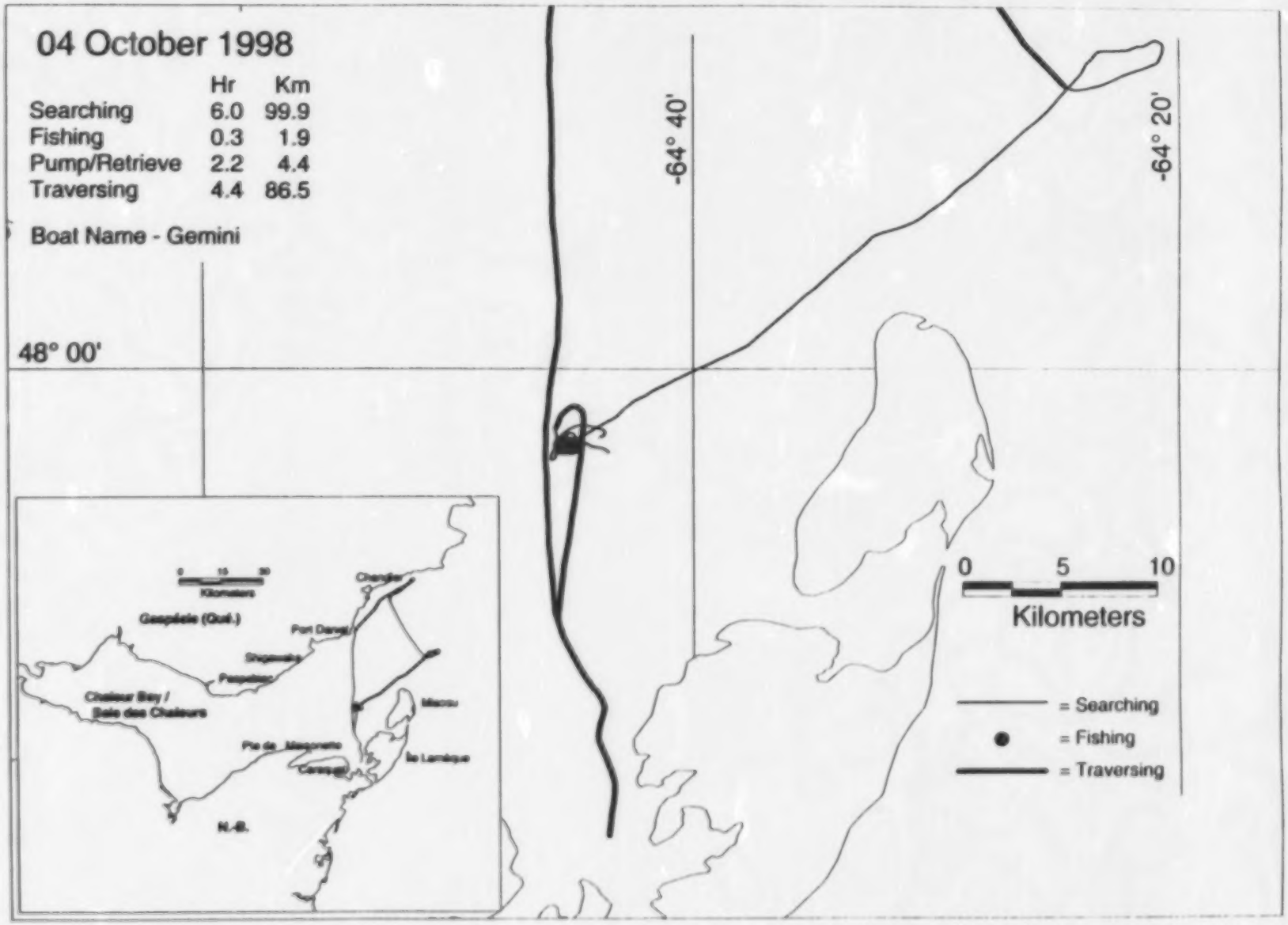

24 September 1998
Hr Km
Searching 10.5 150.7
Fishing 0.1 0.9
Pump/Retrieve 1.1 2.9
Traversing 2.4 45.2
Boat Name - Gemini
-65° 00'
-64° 40'
48° 00'
= Searching
= Fishing
= Traversing
0 4 8
Kilometers

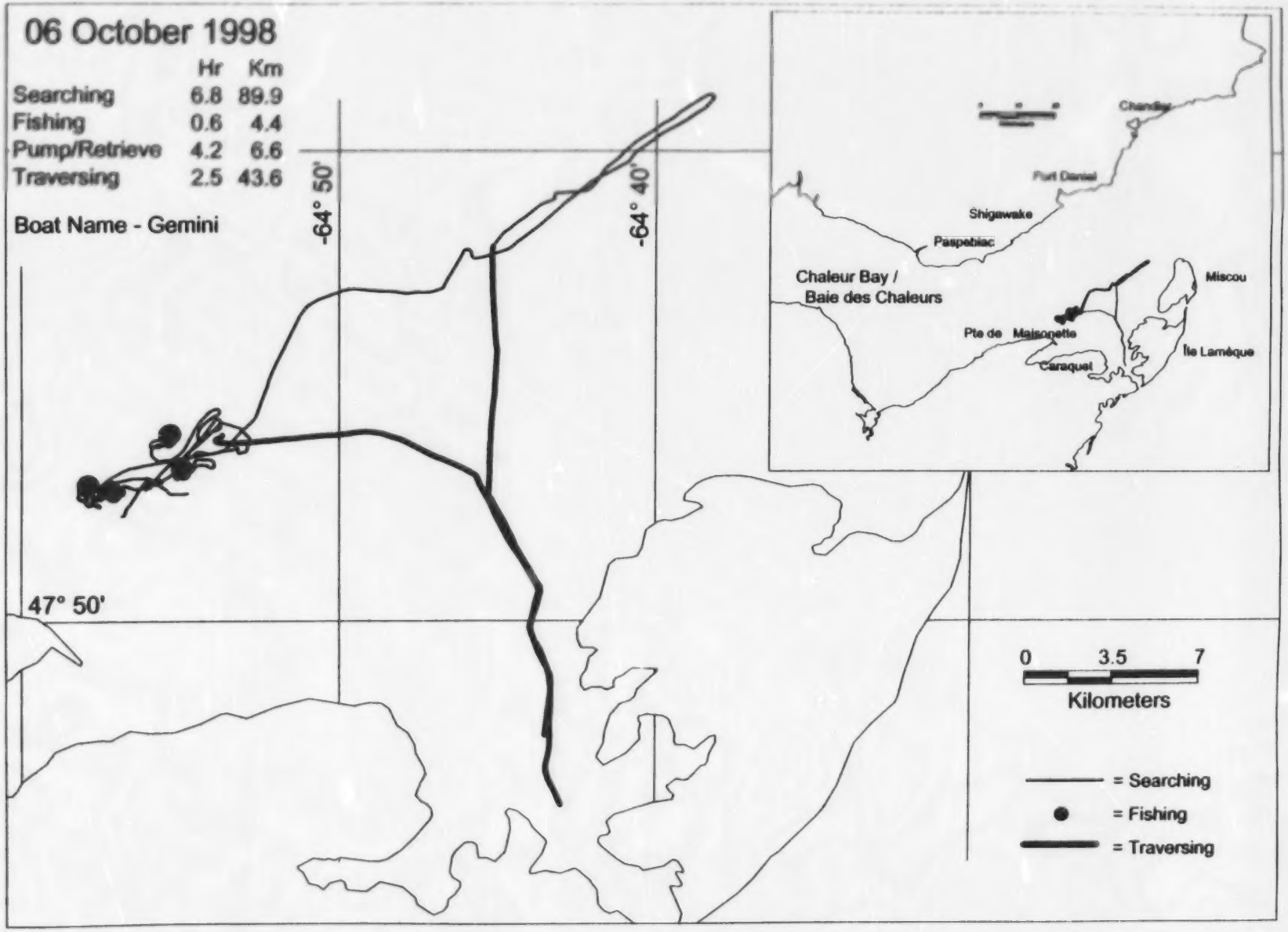

25 September 1998
Hr Km
Searching 9.7 136.5
Fishing 0.2 1.6
Pump/Retrieve 1.7 2.4
Traversing 13.6 273.4
Boat Name - Gemini
-64° 20'
-64° 00'
49° 00'
= Searching
= Fishing
= Traversing
0 5 10
Kilometers
Chaleur Bay /
Baie des Chaleurs

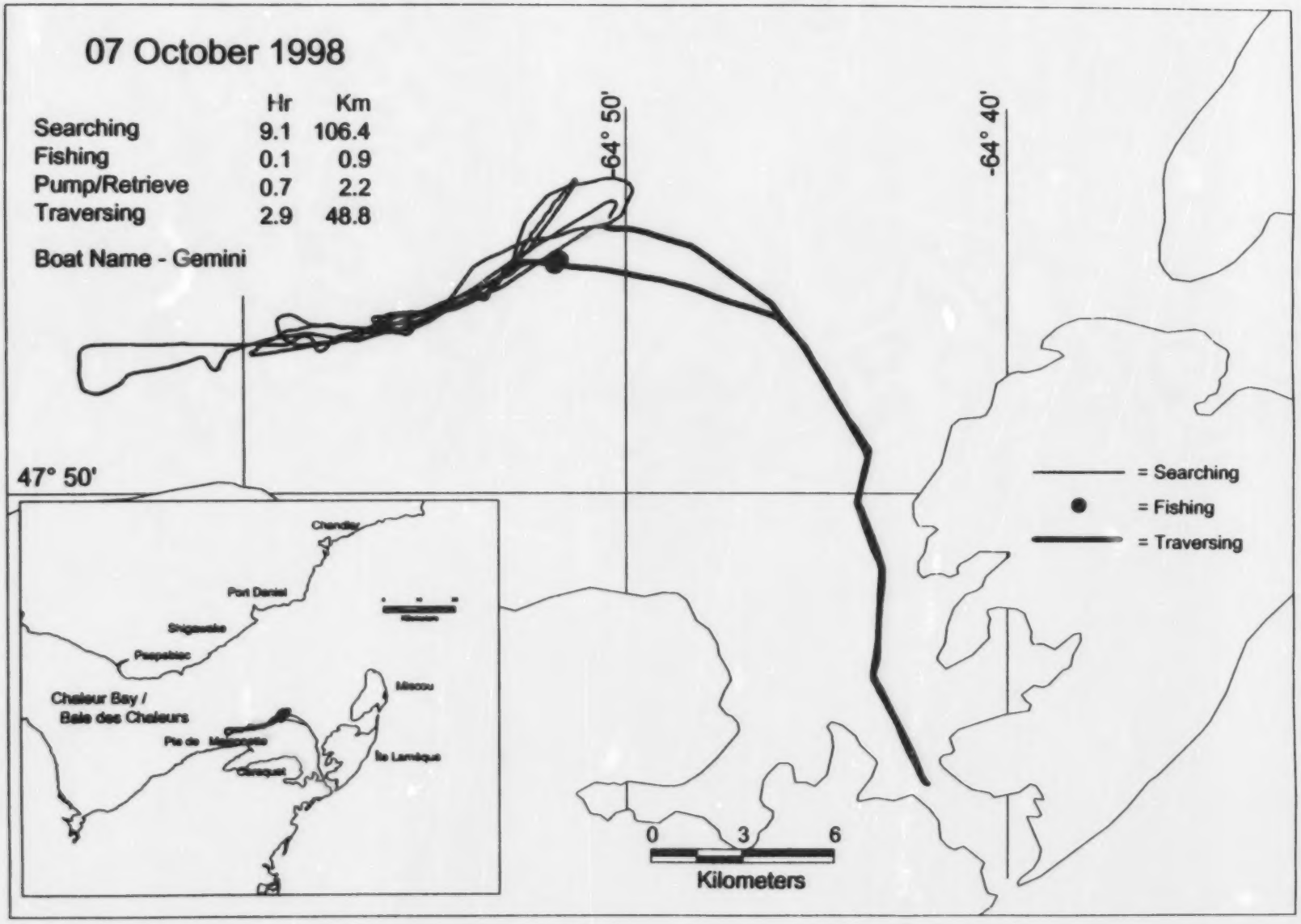

26 September 1998
Hr Km
Searching 7.6 126.0
Fishing 0.4 3.1
Pump/Retrieve 2.5 4.4
Traversing 2.9 56.2
Boat Name - Gemini
48° 00'
-64° 40'
-64° 20'
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Miscou
Pte de Maisonnette
Caraquet
Île Lamèque

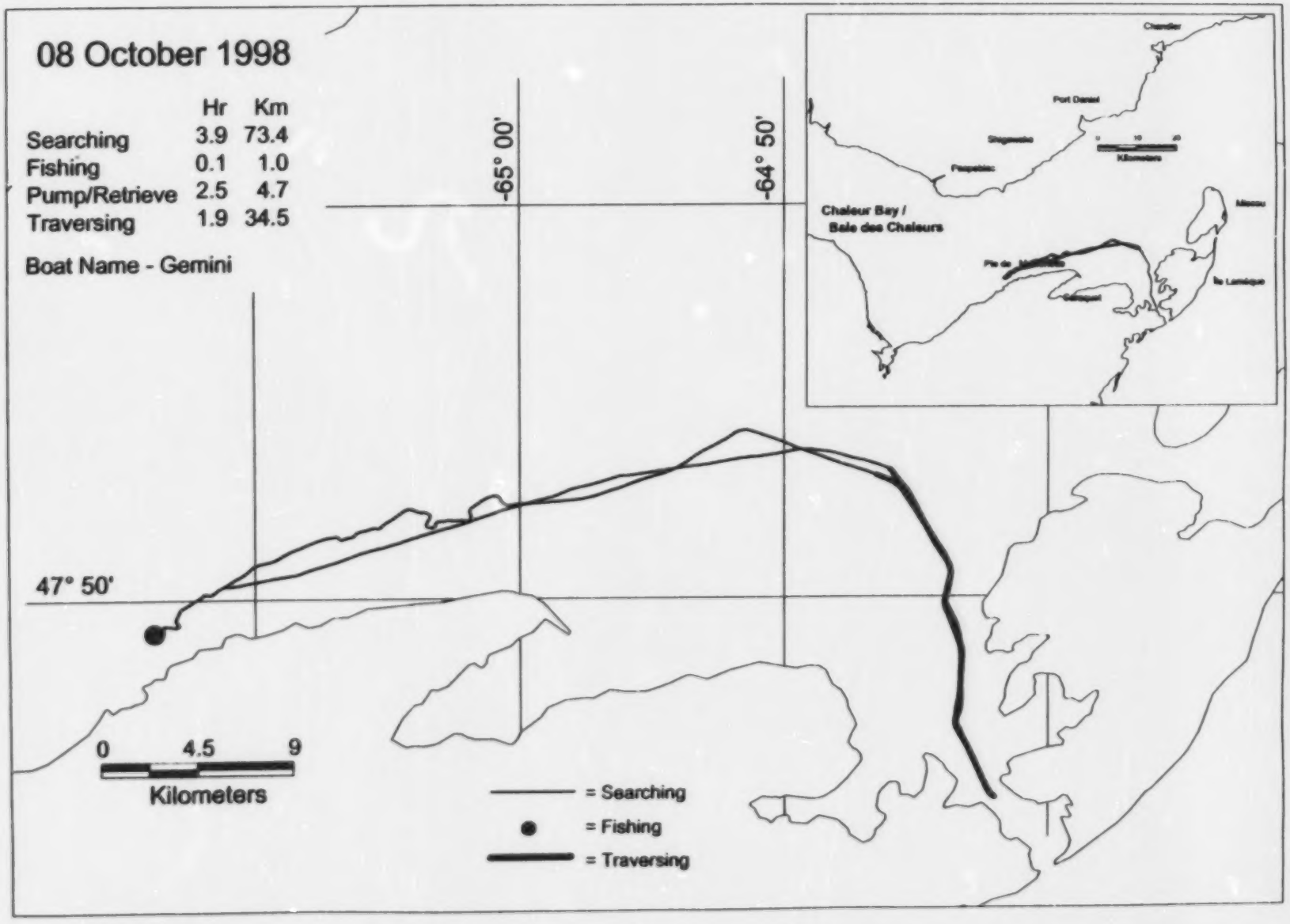

28 September 1998
0 7.5 15
Kilometers
Hr Km
Searching 5.4 77.6
Fishing 0.2 1.2
Pump/Retrieve 1.8 2.3
Traversing 5.4 105.0
Boat Name - Gemini
= Searching
= Fishing
= Traversing
48° 20'
48° 00'
-65° 20'
-64° 20'
Chaleur Bay /
Baie des Chaleurs

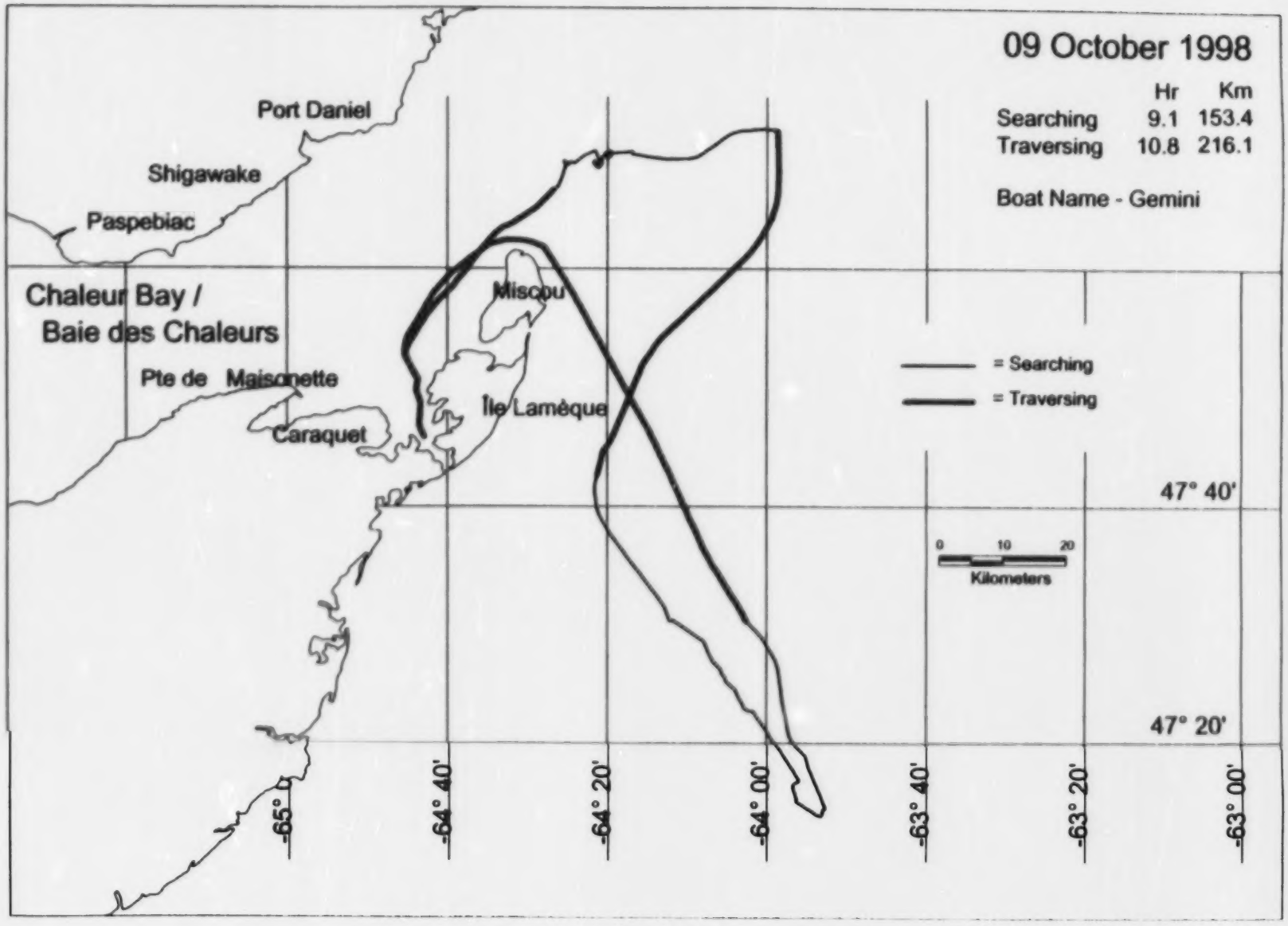

29 September 1998
0 6 12
Kilometers
Hr Km
Searching 8.7 128.5
Traversing 9.5 179.9
Boat Name - Gemini
= Searching
= Traversing
-64° 00'
-63° 40'
48° 00'
Chaleur Bay /
Baie des Chaleurs

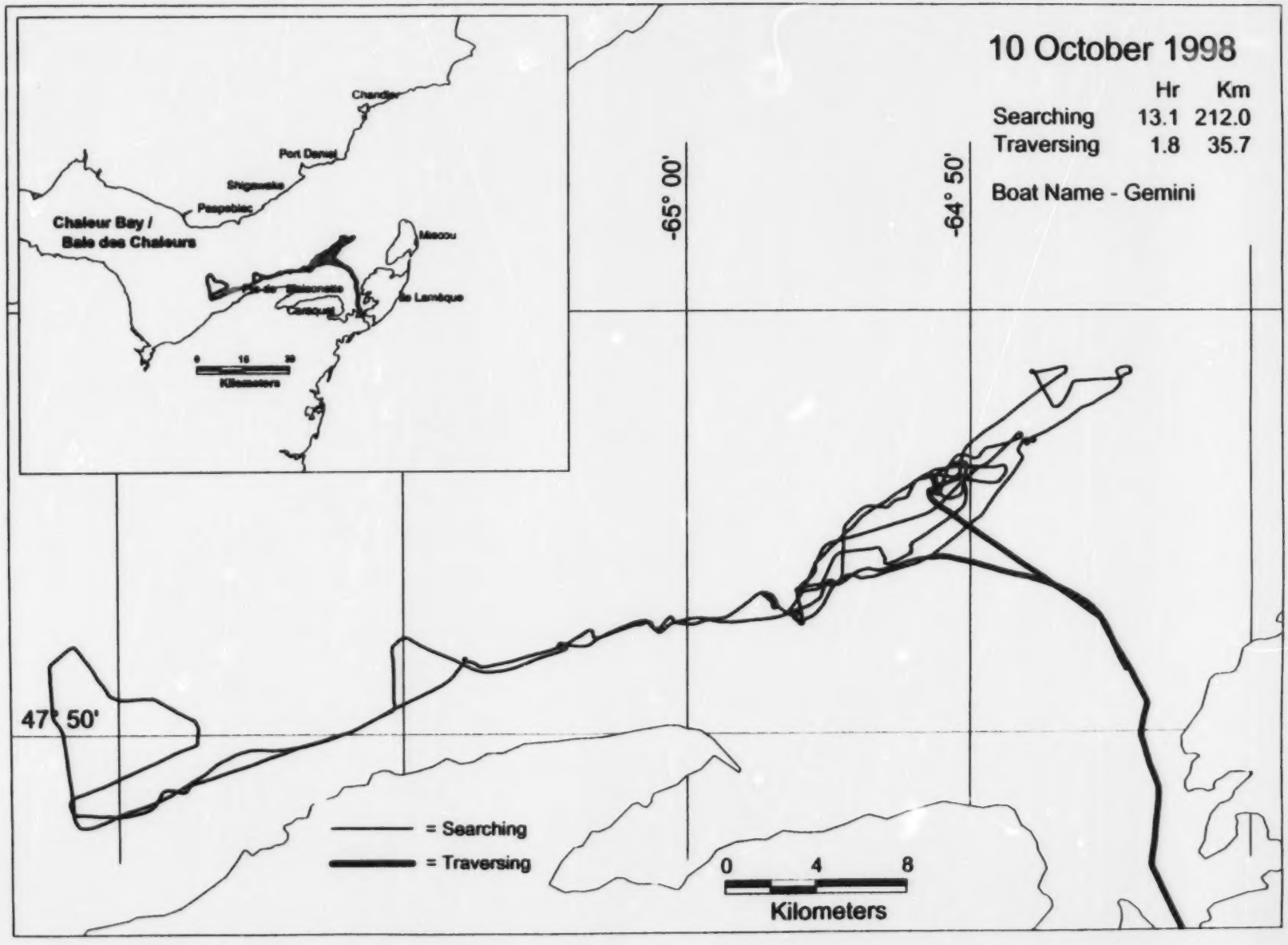

04 October 1998
Hr Km
Searching 6.0 99.9
Fishing 0.3 1.9
Pump/Retrieve 2.2 4.4
Traversing 4.4 86.5
Boat Name - Gemini
48° 00'
-64° 40'
-64° 20'
0 5 10
Kilometers
= Searching
= Fishing
= Traversing
Gaspésie (Qué.)
Chaleur Bay /
Baie des Chaleurs
N.-B.

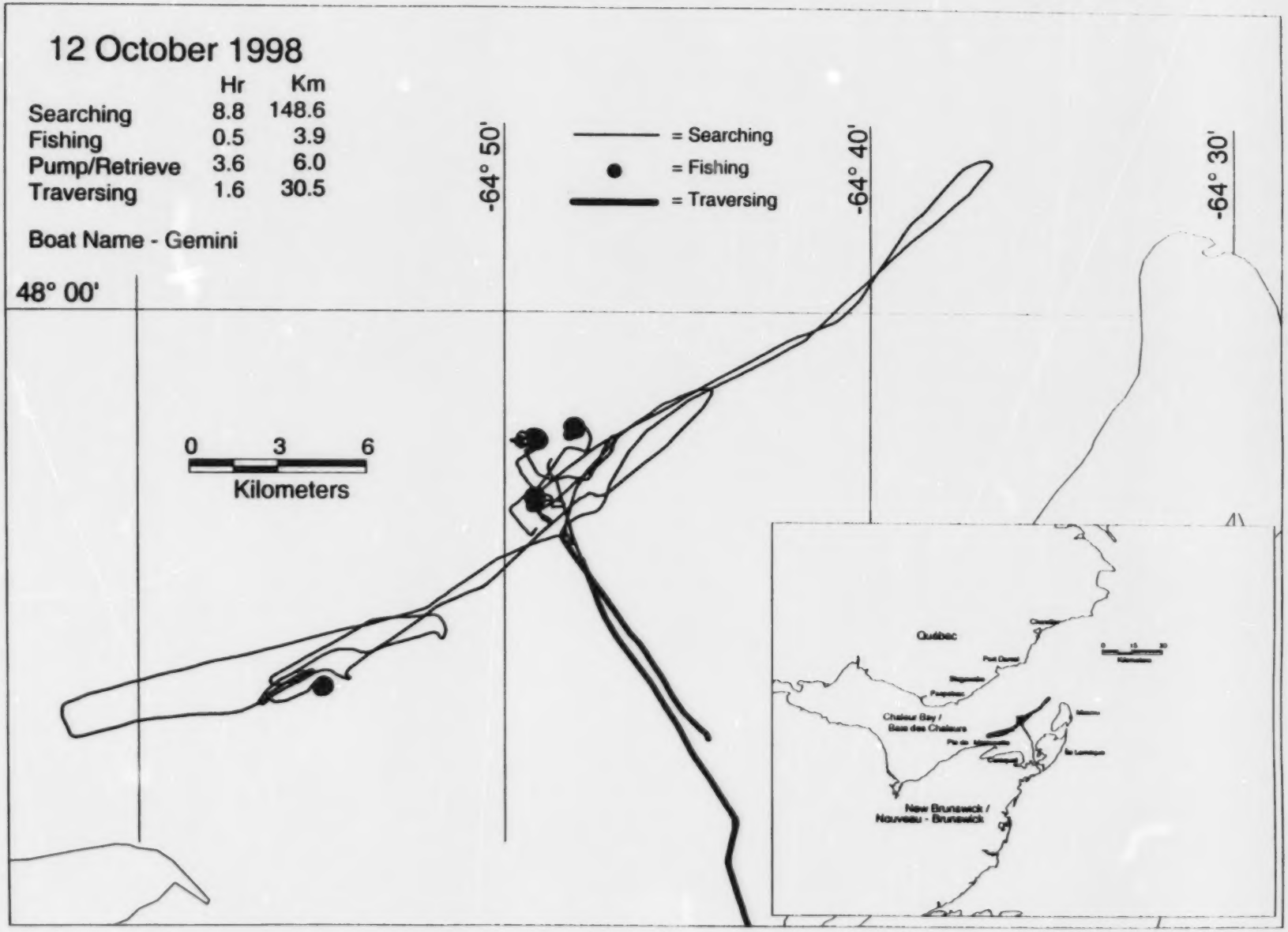

06 October 1998
Hr Km
Searching 6.8 89.9
Fishing 0.6 4.4
Pump/Retrieve 4.2 6.6
Traversing 2.5 43.6
Boat Name - Gemini
-64° 50'
-64° 40'
47° 50'
Chandler
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Miscou
Pte de Maisonette
Caraquet
Île Lamèque
0 3.5 7
Kilometers
= Searching
= Fishing
= Traversing

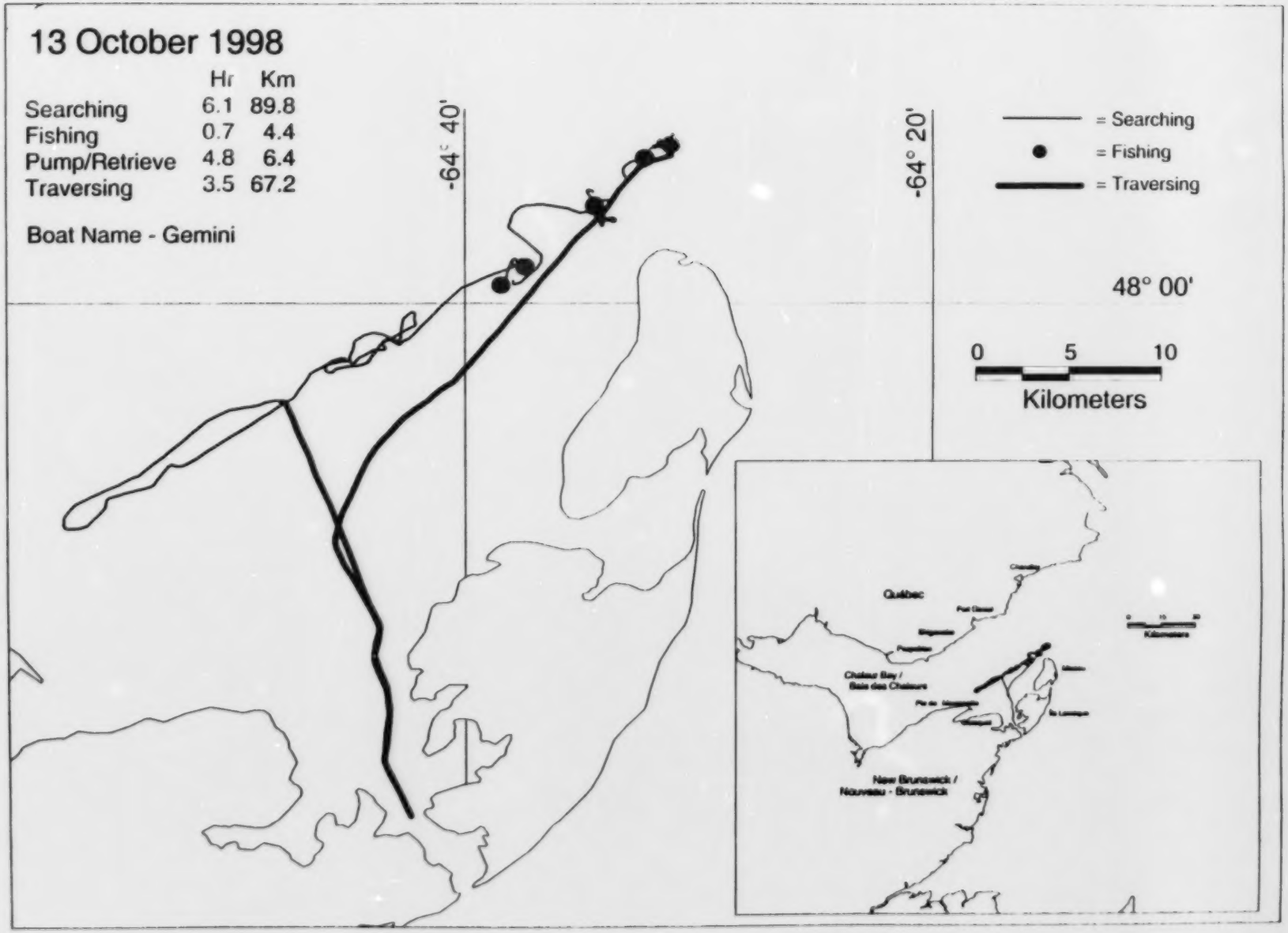

07 October 1998
Hr Km
Searching 9.1 106.4
Fishing 0.1 0.9
Pump/Retrieve 0.7 2.2
Traversing 2.9 48.8
Boat Name - Gemini
-64° 50'
-64° 40'
47° 50'
= Searching
= Fishing
= Traversing
Chandler
Port Daniel
Shigawake
Paspebiac
Miscou
Chaleur Bay /
Baie des Chaleurs
Pte de Maisonnette
Carleton
Île Lamèque
0 3 6
Kilometers

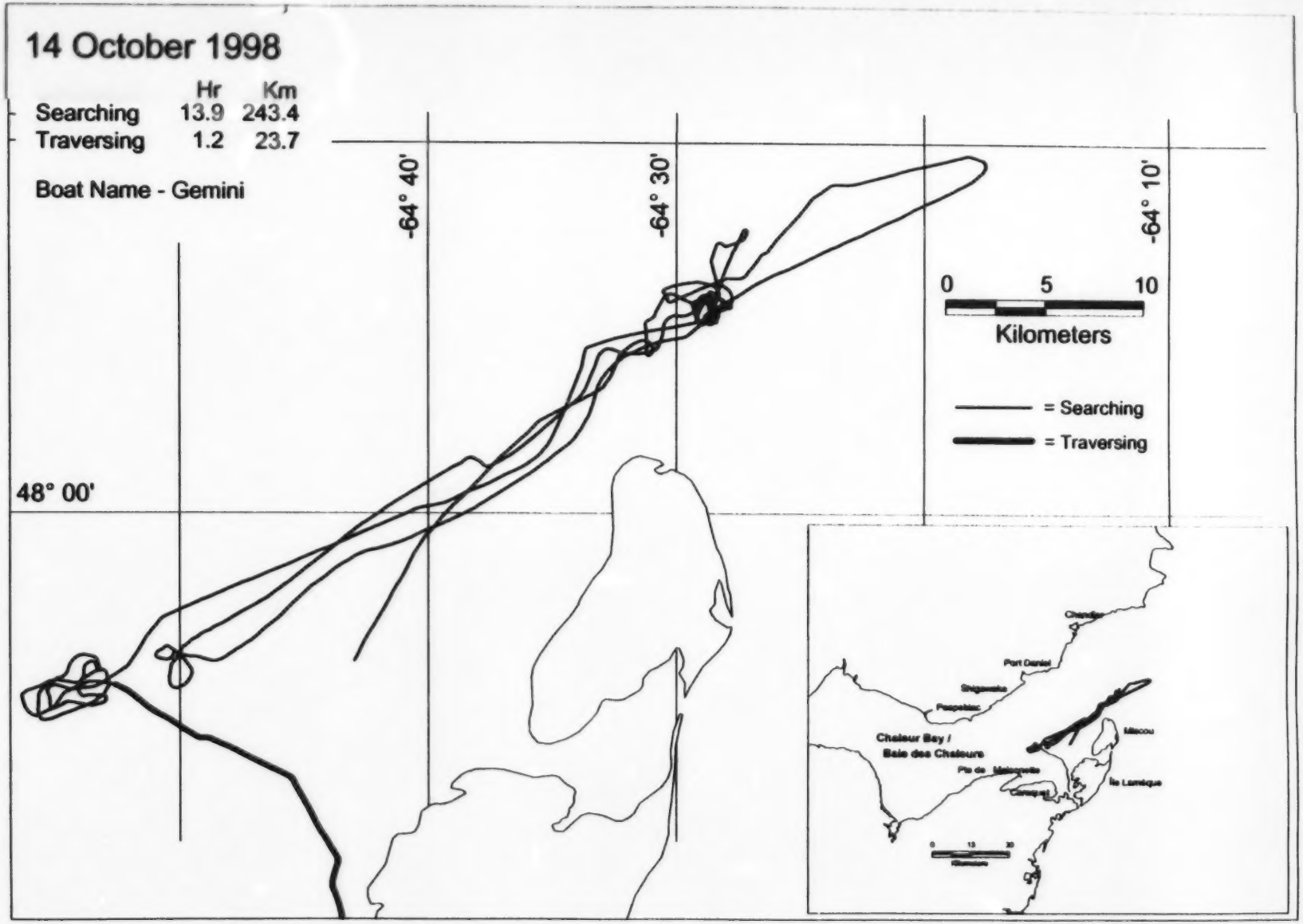

08 October 1998
Hr Km
Searching 3.9 73.4
Fishing 0.1 1.0
Pump/Retrieve 2.5 4.7
Traversing 1.9 34.5
Boat Name - Gemini
-65° 00'
-64° 50'
47° 50'
Chaleur Bay /
Baie des Chaleurs
0 4.5 9
Kilometers
= Searching
= Fishing
= Traversing

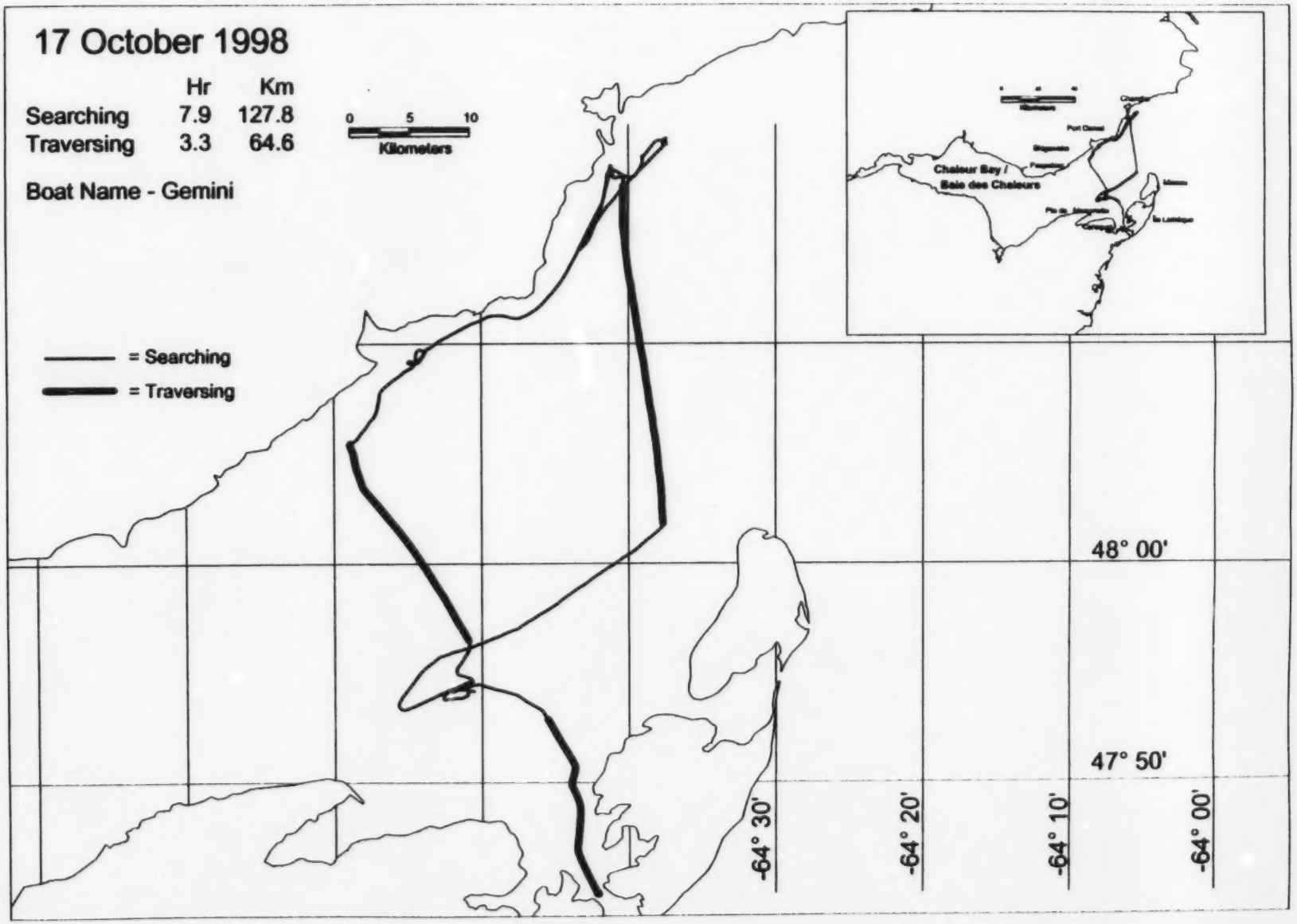

09 October 1998
Hr Km
Searching 9.1 153.4
Traversing 10.8 216.1
Boat Name - Gemini
Port Daniel
Shigawake
Paspebiac
Chaleur Bay /
Baie des Chaleurs
Miscou
Pte de Maisonnette
Île Lamèque
Caraquet
= Searching
= Traversing
47° 40'
47° 20'
0 10 20
Kilometers
-65°
-64° 40'
-64° 20'
-64° 00'
-63° 40'
-63° 20'
-63° 00'

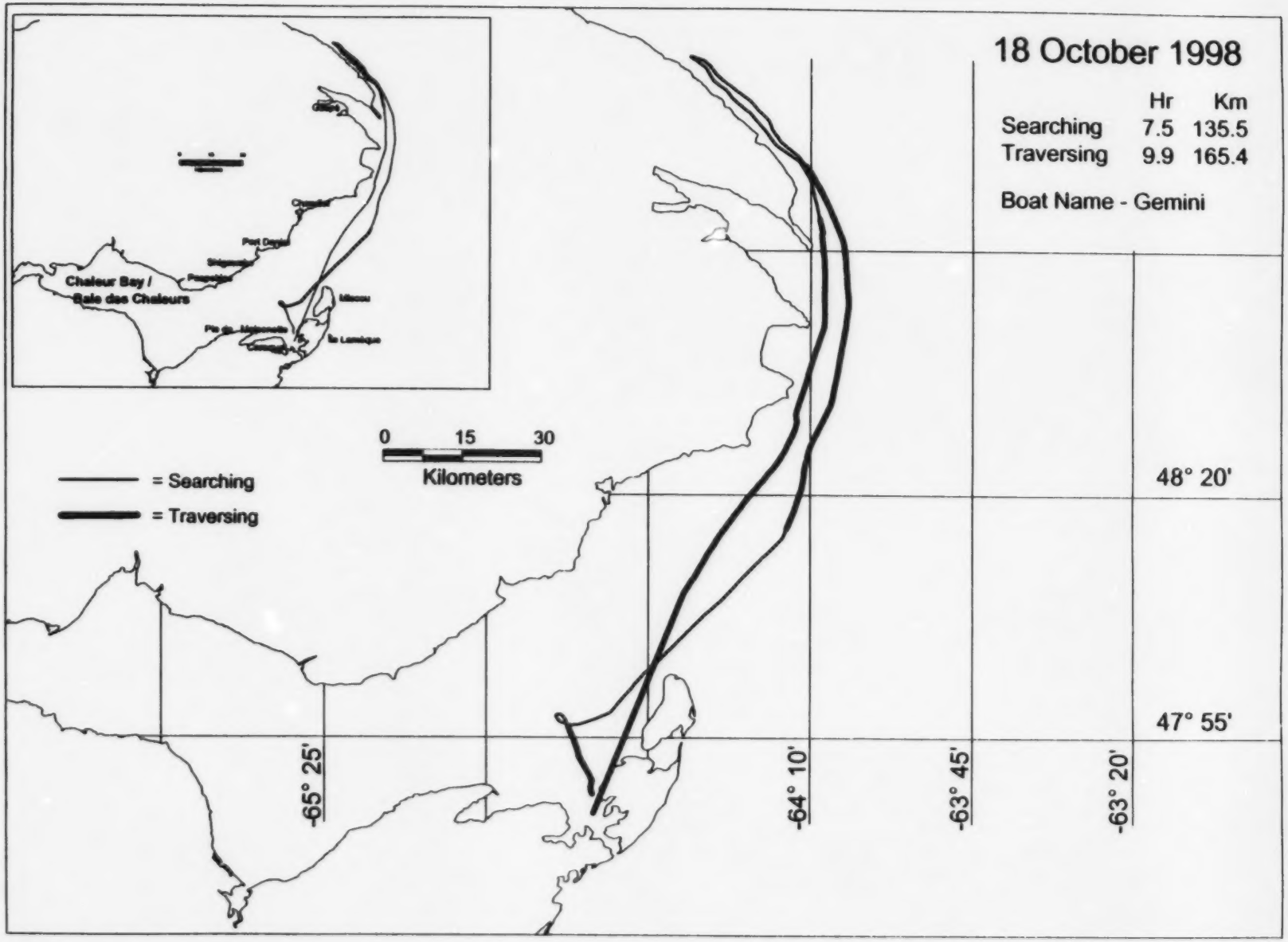

10 October 1998
Hr Km
Searching 13.1 212.0
Traversing 1.8 35.7
Boat Name - Gemini
-65° 00'
-64° 50'
47° 50'
Chaleur Bay /
Baie des Chaleurs
Port Daniel
Shigawake
Paspebiac
Miscou
Lamèque
= Searching
= Traversing
0 4 8
Kilometers

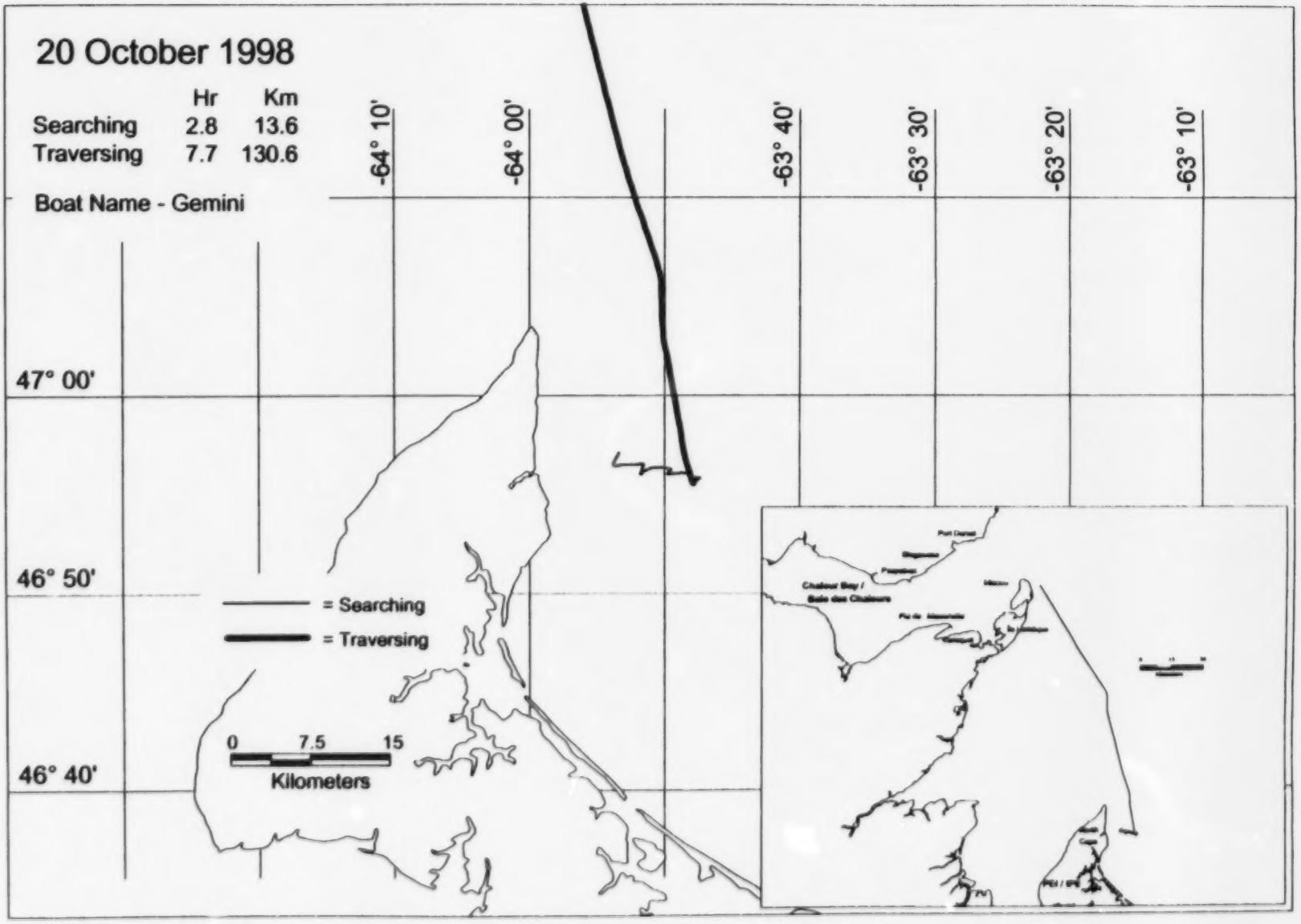

12 October 1998
Hr Km
Searching 8.8 148.6
Fishing 0.5 3.9
Pump/Retrieve 3.6 6.0
Traversing 1.6 30.5
Boat Name - Gemini
= Searching
= Fishing
= Traversing
-64° 50'
-64° 40'
-64° 30'
48° 00'
0 3 6
Kilometers
Québec
Chaleur Bay /
Baie des Chaleurs
New Brunswick /
Nouveau - Brunswick

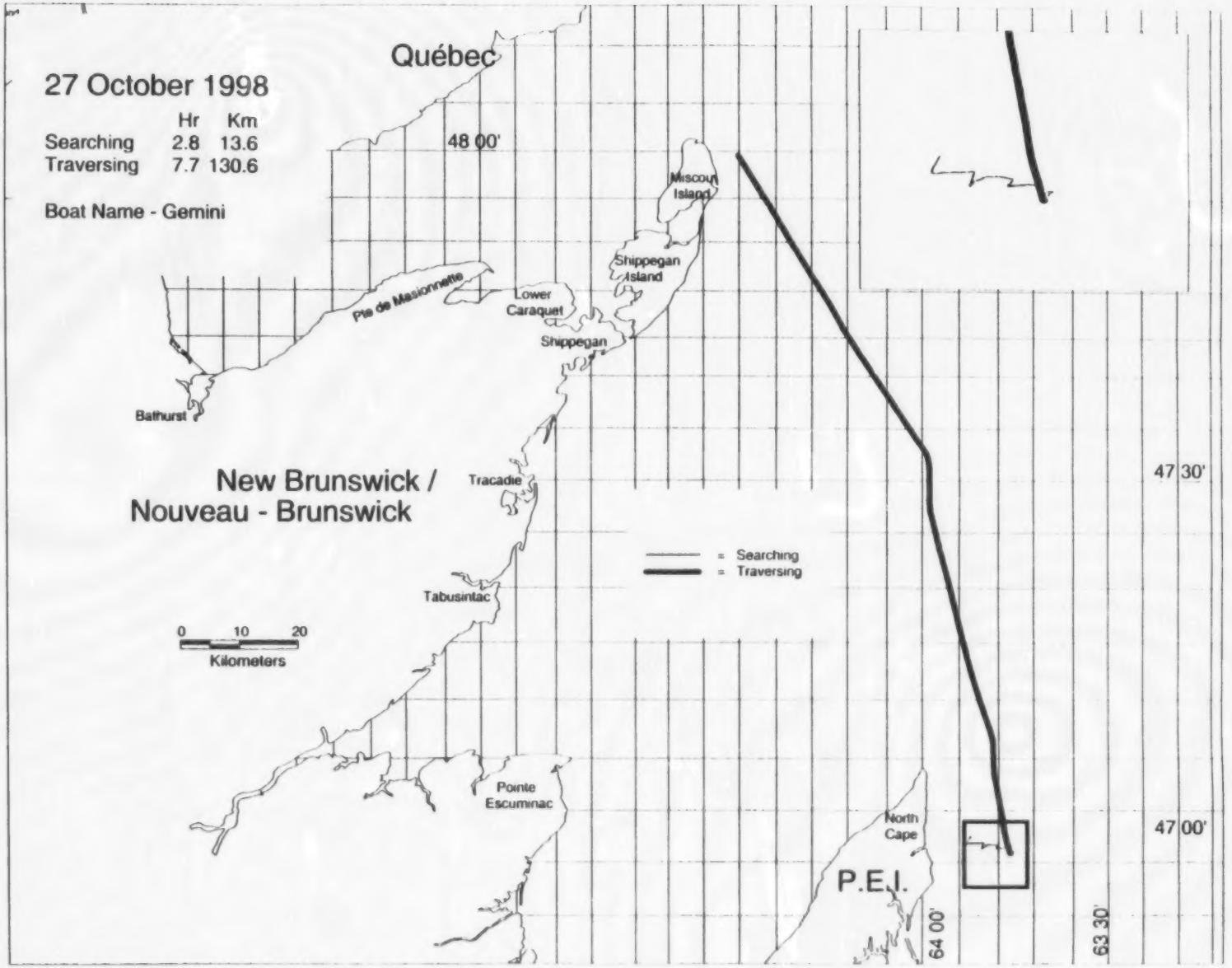

13 October 1998
Hr Km
Searching 6.1 89.8
Fishing 0.7 4.4
Pump/Retrieve 4.8 6.4
Traversing 3.5 67.2
Boat Name - Gemini
-64° 40'
-64° 20'
= Searching
= Fishing
= Traversing
48° 00'
0 5 10
Kilometers
Québec
Chaleur Bay / Baie des Chaleurs
New Brunswick / Nouveau - Brunswick

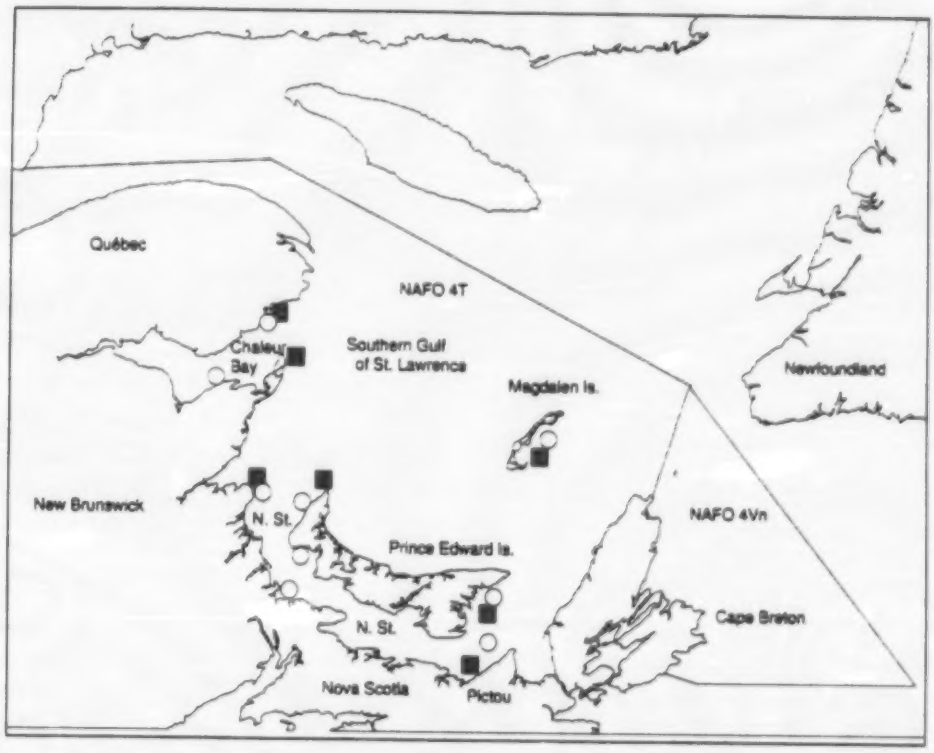

14 October 1998
Hr Km
Searching 13.9 243.4
Traversing 1.2 23.7
Boat Name - Gemini
-64° 40'
-64° 30'
-64° 10'
48° 00'
0 5 10
Kilometers
= Searching
= Traversing
Chaleur Bay /
Baie des Chaleurs
Miscou
Île Lamèque


17 October 1998
Hr Km
Searching 7.9 127.8
Traversing 3.3 64.6
0 5 10
Kilometers
Boat Name - Gemini
= Searching
= Traversing
Chaleur Bay /
Baie des Chaleurs
48° 00'
47° 50'
-64° 30'
-64° 20'
-64° 10'
-64° 00'


18 October 1998
Hr Km
Searching 7.5 135.5
Traversing 9.9 165.4
Boat Name - Gemini
Chaleur Bay / Baie des Chaleurs
0 15 30
Kilometers
= Searching
= Traversing
48° 20'
47° 55'
-65° 25'
-64° 10'
-63° 45'
-63° 20'


20 October 1998
Hr Km
Searching 2.8 13.6
Traversing 7.7 130.6
Boat Name - Gemini
-64° 10'
-64° 00'
-63° 40'
-63° 30'
-63° 20'
-63° 10'
47° 00'
46° 50'
46° 40'
= Searching
= Traversing
0 7.5 15
Kilometers


27 October 1998
Hr Km
Searching 2.8 13.6
Traversing 7.7 130.6
Boat Name - Gemini
Québec
48 00'
Miscou Island
Shippegan Island
Pte de Maisonnette
Lower Caraquet
Shippegan
Bathurst
New Brunswick / Nouveau - Brunswick
Tracadie
Tabusintac
Pointe Escuminac
= Searching
= Traversing
0 10 20
Kilometers
North Cape
P.E.I.
47 30'
47 00'
64 00'
63 30'



Appendix 1. Southern Gulf of St. Lawrence place names mentioned in the text and location of spring and fall herring spawning areas. Squares represent fall spawning areas, open circles spring spawning areas. * N. St.; Northumberland Strait.